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Bell Telephone MAGAZINE

Providing Employees with Information They Want
JOHN W. COGSWELL

Keeping Our Dispatch-Type Services Ever Ready
ROBERT H. HENDERSON

Building to Serve a City for a Little While
A PICTURE STORY

Recruiting Employees through Employees • PETER B. HOWELL and CLIFFORD J. HEDIN

Western Electric's Part in Offsetting Rising Costs
HOWARD G. ANDERSON

American Telephone & Telegraph Company · New York

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A Medium of Suggestion & A Record of Progress

JUDSON S. BRADLEY, *Editor.* *Published four times a year for the supervisory forces of the Bell System by the Public Relations Department of the*
AMERICAN TELEPHONE AND TELEGRAPH CO., *195 Broadway, New York 7, N. Y.*
CLEO F. CRAIG, *President;* S. WHITNEY LANDON, *Sec.;* JOHN J. SCANLON, *Treas.*

Who's Who & What's What

in This Issue

THIS ISSUE'S first article is also the first exposition of the philosophy underlying the present "point of view" concept of employee information. JOHN W. COGSWELL joined A. T. & T.'s Public Relations Department in July of 1952, with the title of employee information manager and the assignment of programming and coördinating employee information activities. In preparation of the article he had the help of his two information supervisors: Joy F. Hutton, who returned last July to The Pacific Telephone and Telegraph Company to carry on the same sort of work there, and Walter A. Lehnert, who remains with him in New York. Mr. Cogswell joined the Commercial Department of the New York Telephone Company in 1931, and served as representative and as manager in several communities in the Long Island Area until 1944. In that year he moved to the Upstate Area, where he held posts as district manager in Utica and Buffalo until becoming division manager in the latter city in 1949—the office he left to join A. T. & T. three years later.

SPECIAL SERVICES often require special kinds of circuits, and ROBERT H. HENDERSON deals intimately with all kinds on the basis of his quarter-century career in the Long Lines Department and in the Department of Operation and Engineering of the A. T. & T. Company. He started with the former in 1924, and held assignments in New York and Buffalo before moving, in 1928, to the Long Lines general plant supervisor's organization in New York. In 1935 he was appointed supervisor of program transmission, and in 1940 supervisor of transmission maintenance methods in the general plant manager's office. Five years later he moved to the O. & E. Department of A. T. & T., and in 1948 became toll service engineer. Here he works with Long Lines and the Associated Companies on radio and toll service problems. Not only is he concerned with the types of cir-

John W. Cogswell

Robert H. Henderson

Peter B. Howell

Clifford J. Hedin

Howard G. Anderson

Ralph E. Mooney

cuits he describes in these pages but he has been involved with mobile radio telephone service since the Bell System entered that field in 1946.

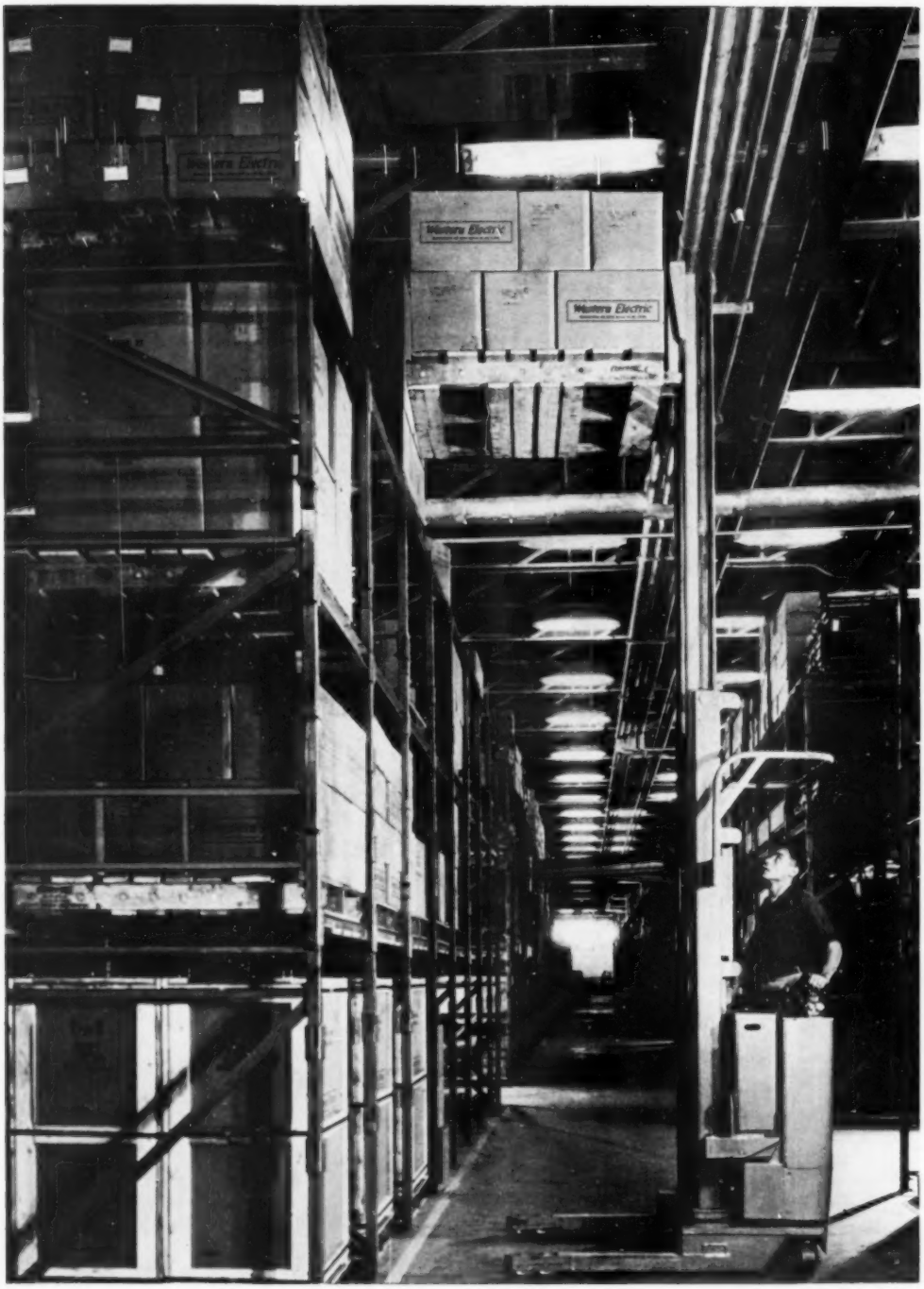
COLLABORATION between A. T. & T.'s Traffic Department and "the field" has produced an article which gives both general and particularized views of the current problem of Bell System employment.

PETER B. HOWELL began his career with the New York Telephone Company in 1927 in the Traffic Department in the Manhattan-Bronx-Westchester Area. After various field and staff assignments, he transferred to the Long Island Area in 1941 as district traffic superintendent. He later became traffic employment and training supervisor, and supervisor of employment when the hiring of all women was centralized for the area. Mr. Howell has been in A. T. & T.'s Traffic Division since October 1945, where he has held various assignments associated with recruiting, employment, induction of new employees, training, the reduction of force losses, and, for a period, operating practices. Much of his time is spent in the field, working with the various companies in connection with their recruiting, employment, and force loss problems.

CLIFFORD J. HEDIN was assistant statistician in the Minnesota Area Accounting Department of the Northwestern Bell Telephone Company when he was given the assignment of organizing the employee recruiting program in Minneapolis and St. Paul late in 1952. He started with that company in 1924 as a groundman in the Construction Department, and in 1929 transferred to the Accounting Department, where he held various supervisory positions in Omaha and Minneapolis. At present he is supervisor of employment in the Minnesota Area Traffic Department.

AN EDITOR AND WRITER in Western Electric's public relations organization, HOWARD G. ANDERSON is responsible for preparing and circulating informative articles about the Bell System's manufacturing and supply unit to public relations men and women of the Bell telephone companies. His introduction to the writing trade was as a newspaper reporter in Allentown, Pa., where he spent much of his time preparing feature stories about the colorful inhabitants of that "Pennsylvania Dutch" community. After a three-year tour of duty as gunnery officer in the Navy, he moved to California for five years of public relations work in the medical field. On a trip East, he found Western Electric during his absence had built a manufacturing plant in Allentown that was an industrial showplace of the Lehigh Valley, and promptly decided he wanted to remain and join Western Elec-

(*Continued on page 185*)



New warehouse buildings and more efficient methods of handling telephone materials, such as this "straddle stacker" lifting a palletized load, are helping Western Electric overcome some of the effects of inflation. *See the article beginning on page 170*

"Point of View" Is the Vital Element in an Information Program which Will Give Telephone People the Facts They Are Entitled to Know about This Business

Providing Employees with Information They Want

John W. Cogswell

THE OPERATOR looked her chief right in the eye and calmly asked, "So what?"

There was a pause, while the chief operator got adjusted to this abrupt hitch in her presentation of the Annual Report. Then she replied, "Why, it's important. It's the report card on our business. Our jobs, our benefits, our futures are wrapped up in it."

"But what can I do about it? What if I didn't like something? Would that make any difference?"

The chief operator tapped her pencil, troubled. There was an answer, but she couldn't put it into words quickly for this outspoken youngster. Chances are she sighed and tried to get back on the subject. But it was hard going, because her line of communication had been snapped.

We do not mean to present the chief operator in a poor light, for, in all truth, she could have been any one of us, in any department. But the questions the operator raised are basic. What kinds of information *do* employees want? Who does care? Why? How important is it? Does it make any difference?

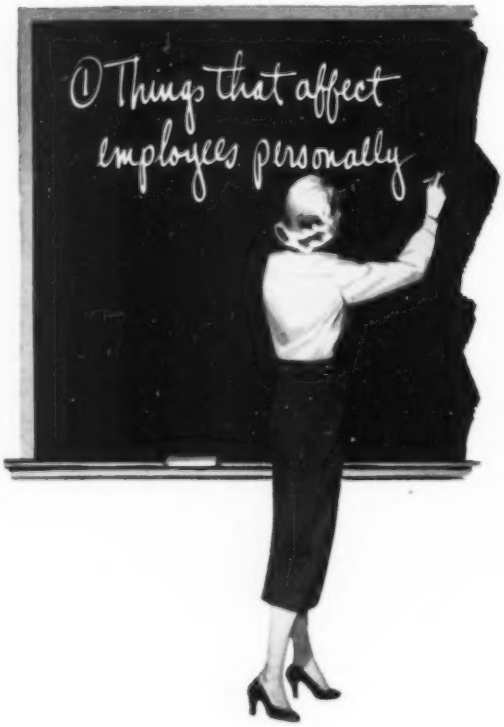
Any employee, no matter how long he is around, absorbs a good deal of general information about the business over and above the specific details of his job. This experience factor builds up for the individual a personal pattern of knowledge and understanding. It emphasizes the fact that no single project can adequately do the employee information job.

It is natural to be concerned about the feelings employees have about the telephone business, and the way they pass them on to others. You want those feelings to be loyal and favorable, but such a reflection doesn't come automatically. *You have to*

earn it, by the things you do and the things you say.

The main interest here is in the things that are said, the planned information that people receive. Is it effective? Are they getting as much as they want? Is the best possible job being done?

Our expressed intention is to let employees know what's going on in the business; what the problems, plans, and accomplishments are. To do this, certain information is added to the informal experience stream we have described. In the case of the young operator, this effort entailed careful preparation and appropriate visual aids. It was in line with a perfectly sincere management conviction that a clear understanding is to the employee's interest as well as the company's.



But the employee said, in effect, "That's got nothing to do with me."

You might retort, "She's young. She's fresh. We can forget her. She's got a steady boy friend and won't be with us long."

You would be sadly wrong. This girl will be with us as long as she lives. She will be a moving, talking unit of our society, with full right and plenty of will to express herself. She will be an authority on telephone matters because she worked for the telephone company. And her opinion will carry weight with her family, other customers, friends and neighbors. If you dismiss this girl as an isolated case, without investigating further, you are plunging your head deep in the sand.

Let's go back to that little meeting. The chief operator talked. She said, in effect, "Here is something significant to you. Please listen."

Obediently, the girl listened. In the majority of cases, that would have been that. But not this youngster. She never heard of "two-way communication," but she felt entitled to her say. So she talked back.

"There are two sides to this," she implied.

Values of Two-Way Communication

THE RESULT left the chief puzzled and disturbed and a little hurt. No one likes his good intentions to get trampled flat. But her state of mind can improve if she realizes the girl did her a favor.

For what she said amounted to "You assume I'm interested in

big figures and percents because you are. You act disappointed and indignant when I'm not. You'd have saved a lot of work if you'd taken the trouble to ask me first."

Hmm. Was she asked? Did anyone take the trouble to find out what she and all her co-workers in Accounting and Commercial and Plant wanted from their side? In all honesty, probably not. There was a great deal of talking being done but not very much listening.

Yet, all of us are vitally interested in having the work experience of employees form for them a favorable opinion about the company. It is not reasonable to expect this job satisfaction unless their ideas are taken into account, too.

Let's heed the operator's suggestion and take a good look at the other side. Let's say to her and all her fellow-workers, "Please tell us what you would like to know about the telephone business."

Actually, this has already been done in a few Bell System companies. While more information is needed, what has been learned all points in one direction. Overwhelmingly, employees first want to know about the close, personal things which touch *them*. They are, in fact, no different from any other human beings on earth.

A realistic analysis of Employee Information must recognize this basic truth: never lose sight of employee self-interest in any informative effort we make. Let's go over to the nearest blackboard right now, print a large number "1" on it, and write:

"Things that affect employees personally."

The customer opinion studies that have been conducted for a number of years show that this business enjoys a great deal of public trust and confidence. We are coming more and more to realize how much of this is due to the part employees play as living testimonials to our good service, good citizenship, and good employment.

What Is the Employee's Role?

BUT HOW MUCH is really known about their part? What questions do friends, acquaintances and customers ask employees? Do they have the answers? Do they need or want any help in this direction? What are their understandings and misunderstandings? Do they have doubts?

Some attempts have been made to get the answers to these questions by interviewing employees. While more studies are needed in this significant area, the few that have been made agree in their conclusions. Employees do talk often to others about the telephone business. They are asked most frequently about service, charges, and employment. And the majority of those interviewed said *yes*, they needed help to answer fully the questions they got.

It's time to go to the blackboard again. After the figure "2" let's add:

"Subjects friends or customers are interested in hearing about."

Employee Information has been looked at now from the employee's view and the customer's view. Is there anything else?

What about the company side? To pay attention only to what employees say they want would be

just as one-sided as the example we started out with. The employee has no way of knowing about many kinds of information—new developments, particular progress and results, future plans, and so on. How can he or she express a desire for them?

Obviously, however, any employee has some degree of interest about what's going on in the business, if only because his or her welfare is for the time being tied up with the company's. Few human urges are stronger than the yen to "be in the know," and even if he or she hasn't expressed a need, management has an obligation to see that the story is offered.

So the list cannot be complete without a third point on the blackboard:

"Useful background information, whether or not the employee has expressed a need."

Information Must Be Available

UNDERLYING the three points already listed on the blackboard is another important factor. Whether or not information is given out, or the employee asks for it, it must be perfectly clear that it is always available. Employees have no incentive to be good public representatives unless their experiences within the business make them *want to.* And if the employee knows that when he wants an answer he can have it—and his experience consistently backs this up—then you have gone a long way toward your objective of earning his respect and loyalty.

Let's print "Availability" across the bottom of the blackboard, and emphasize it.

Now, we believe, you have an outline for the fundamentals of employee information. The best judgment of people within and without the business, as well as every scrap of valid study data available, supports this conclusion. It can be expressed in one sentence this way:

Employee Information is that part of the continuous development of an employee that satisfies his wants and needs for a greater understanding of what goes on in the business.

If all three elements—the employee's desires, the public's desires, and the company's desires—had been present *in proper proportion,* the young operator would not have thrown a monkey wrench into her chief's presentation.

With this understanding, what is the most practical way to put this basic approach to work? Is it really as simple and clear as it seems? How far is it between those words written on the blackboard and the young operator in the workaday atmosphere of her office?

If you, as a supervisor, agree that the evidence is plain and the conclusion reasonable, could you start tomorrow helping other supervisors put it to work? Could you deal with the questions you would inevitably get from them? Could you make such a viewpoint stand up in the day-to-day life of our business?

How Do You Go About It?

THE FIRST QUESTION they would be likely to ask you might well be the $64 one: "The approach sounds reasonable, but how do you go about doing it?"

Well, it's obvious that no concept can earn a place in our business unless it will fit the pattern of our normal operations. So you'd be on safe ground to answer the question with, "Just like any new practice."

"That means along existing channels, then?"

"Right," you reply, "Like induction and training, and day-to-day supervision."

"Now let me get this straight. You want the information in these activities to reflect what employees are interested in as well as what management wants them to have?"

"Yes." You realize that leaves out a thing or two, but it's the main idea.

"That means we have to be sure about what employees really want?"

You nod.

"But don't we know that already? Aren't we passing out information all the time?"

"Sure. You may be doing exactly what we're talking about. But," you point out, "there are many indica-

tions that not everyone is doing it." And if you have sat in on a non-management meeting and heard people discuss freely what they want to know, you would be able to back this up with plenty of specifics.

"Hmm," muses your friend. "Well, all right. I guess I can see what you're driving at—fit it into our normal operations. Will that do it?"

When you realize how powerful informal channels of communication are, your own experience will lead you to reply, "Just fitting it into normal operations isn't enough. Supervisors in their day-to-day contacts do a lot of talking about the business. If they don't have the employee information point of view, the material they pass along isn't likely to take. We've all had to become safety supervisors, haven't we? Why not information supervisors?"

"Now, wait a minute," says your friend in alarm, "We're up to our ears already."

"You took on safety, didn't you?" you ask.

"That's different. That's tangible. You're talking now about something much harder to pin down. A long-range thing."

At this point, you get a bright idea. "How long," you ask, "has safety been going on?"

"I don't remember, exactly."

"The idea was started about 1916. It shaped up in the nineteen-twenties. Our safety creed was coined in 1937. Wouldn't you call that long range? It's over thirty years."

"Well, yes. But somehow I can't get this information function down to earth, the way I can safety. Can you give me an example?"

"I just did," you say calmly.

"You . . . what?"

"I gave you some history on the safety program, so easily and naturally you didn't even realize you were getting information. I didn't make a big deal out of it. I just took advantage of an opportunity. Timed it, too. Six seconds."

It's a Point of View

THERE MAY WELL BE a thoughtful pause. Then your point is apt to be played back to you in some such way as this: "You mean never losing a chance to pass out some background or explanation, as long as it fits at the time. You're really talking about a *point of view.*"

"I guess I am."

"But I think I have that point of view now."

"I hope you do. If so, your results should reflect it, and others ought to know about it."

Even so, if this supervisor, or another like him, were to sit in and listen to employee comments freely expressed, chances are his views would alter.

He'd hear that many employees tend to retain information better if it is given to them orally. That people lose confidence in supervisors who don't seem to have the answers. That they don't understand some things we take for granted. That employees prefer simple, clear, one-at-a-time explanations. That employees are eager to make suggestions that may help with company problems. And finally, he'd feel the real enthusiasm that such meetings generate among both employees and supervisors.

When you say that oral information is much better, more effective, than written, don't forget that written is the basis of all our effort and can never be replaced. But an informal, face-to-face contact is usually much more compelling than the lecture or "telling" kind. Why? It is warm, it is personal, it allows for two-way movement of questions and answers and ideas.

It can be elaborately described in terms of identification, recognition and participation, in terms of the anecdotal rather than the rational approach—but all that really means is that human beings are more interested in themselves and other human beings than anything else on earth. And when you take advantage of that fact you can't help but be heard.

Self-Interest Is Powerful

WE ALL KNOW, also, the power of self-interest. You read about a flood control project authorized back in Washington, D. C. Interesting, but hardly something to bring you out of your chair. But a few months later, when a government bulldozer chuffs up to *your* property line . . .

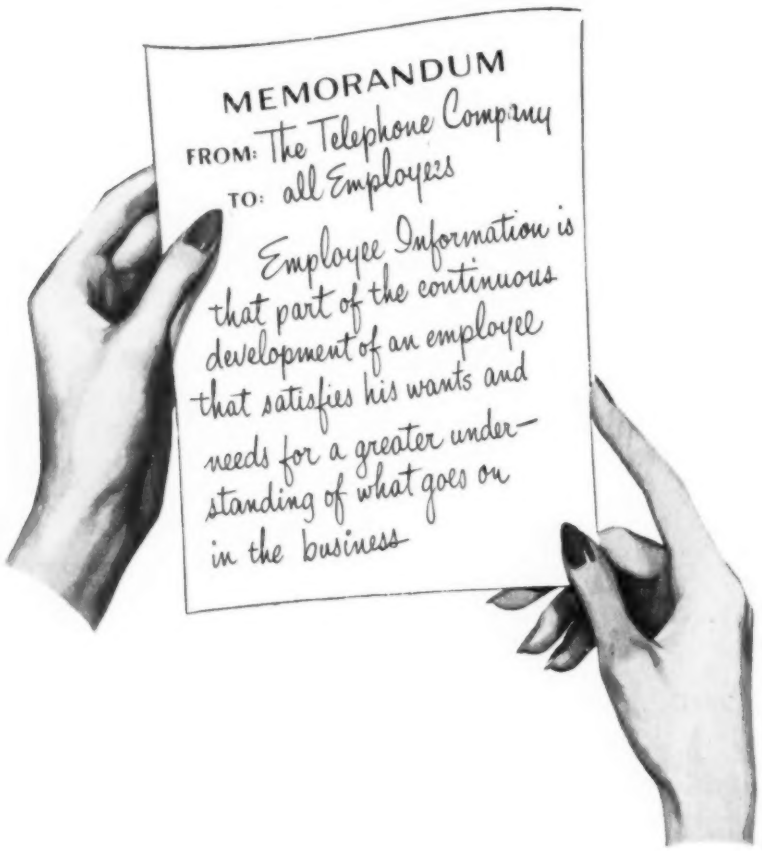
What is the practical way to put this point of view to work? Take the young operator, who heard about a rate of return expressed in percent of total capitalization aggregating hundreds of millions of dollars—about a financially healthy telephone company—something about stocks and bonds—and she backed away from this kind of information.

She's a toll operator. To her, the world of business finance is quite remote. Her day is crowded with cords, keys, toll tickets, and all the fascinating experiences of bringing people together at the switchboard. Including those who don't seem to know the number they're calling.

Wait—how about that as an idea?

She has heard a lot about the call-by-number program. She places calls for some customers who don't have the number they want. She knows how circuits are held up while the number is being found—how much additional work is required by Information and other operators. She's

① Things that affect employees personally
② Subjects friends or customers are interested in hearing about
③ Useful background information, whether or not the employee has expressed a need
AVAILABILITY


MEMORANDUM
FROM: The Telephone Company
TO: all Employees
Employee Information is that part of the continuous development of an employee that satisfies his wants and needs for a greater understanding of what goes on in the business

fully aware of what her company is doing to improve call-by-number performance. The whole subject is as close to the operator as her headset.

This ought to be a "natural"! How about the dollars in circuit time and the services of other people required on calls not placed by number? It's expensive not to encourage calling by number. Such expense is a big item in the company's year-round operations. It's here—in the Annual Report—and one of the items we must allow for in the rate structure.

Call-by-number is a familiar subject and right here at the switchboard less than a cord's length away are the means to relate the company's operations and financial health to it.

But you don't do all the talking. If necessary, you bite your tongue to avoid it. Because there are two sides to this thing, and she has some questions, and some opinions, too. And you are now committed to lean over backwards to give her a chance to participate.

When you are through, she says, "Gee, I didn't know all that." Or, "That's interesting." Or, "Now I see why." Perhaps—because, after all, you have been answering questions she raised—she says, "Thanks," and really means it.

Why shouldn't she? This talk has

tied into her day-to-day work. It will enable her to answer questions her friends might bring up. It has been clear enough for her to understand while holding her interest. It has enabled her to take part in one of life's most satisfying experiences—a sharing of ideas and opinions. She has learned something more, perhaps, about the background of the call-by-number program. She has also learned—without even being conscious of being told—something about good management judgment and the company's approach to one aspect of its rate problem.

Is she likely to say "So what?" now?

Or take something the operator herself has expressed an interest in. Once she asked you about promotions. Promotions are related to a large degree to the growth of the business. The last few years tell an impressive story. So will the next few—assuming the company attracts the capital for the new equipment needed for growth. The ability to do that is tied directly into the financial health of the company. In answering her question, you are telling her much of the story contained in the Annual Report. Perhaps you don't even mention rates directly. But the point is made in a reasonable and natural manner. And, best of all, she is learning that the information is readily available to her.

This kind of communication doesn't fail. It is what is meant by understanding and using Employee Information to its fullest advantage. It means making sure you know what the employee really wants and needs, then filling those desires promptly, clearly, and completely.

When expressed as a continuing point of view by the supervisor, and supported consistently in written material, this has a striking effect on morale. In the last analysis, what is more important to the public relations or the productivity of the business than the morale of the people who are its greatest asset?

Many Thousands of Little-Known Circuits, Performing Unusual Tasks of Special Importance, Need Extraordinary Measures of Protection and Maintenance

Keeping Our Dispatch-Type Services Ever Ready

Robert H. Henderson

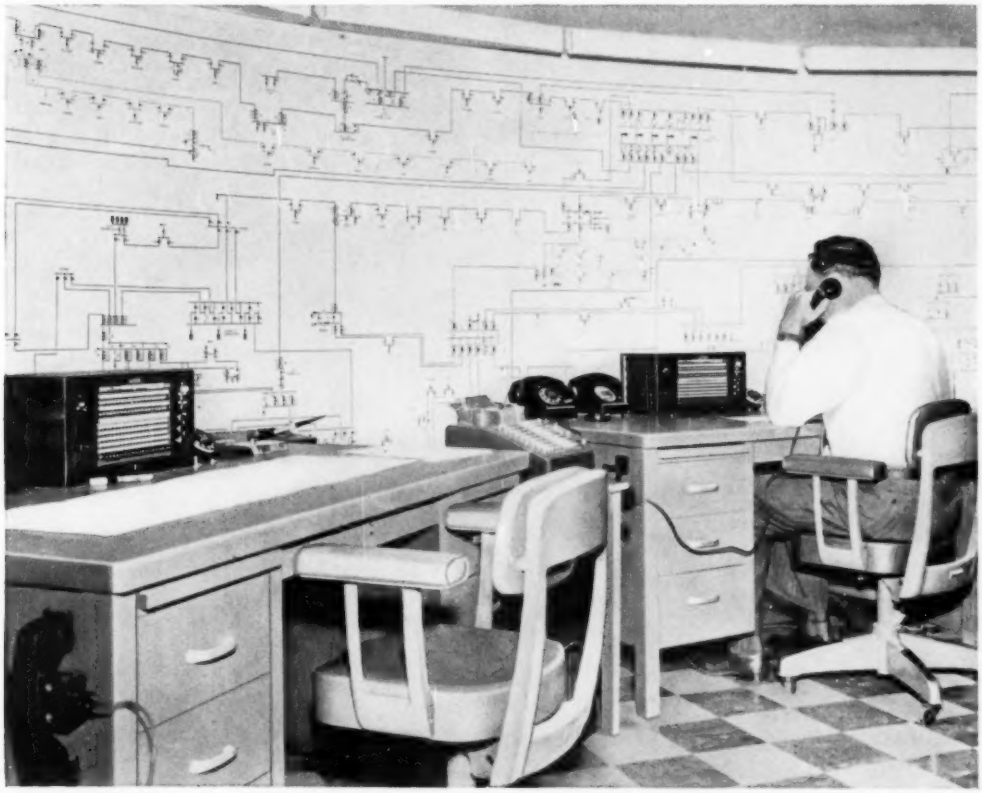
FEW PEOPLE, even in the telephone industry itself, realize the broad scope of the services furnished by Bell System companies. The first thought is of the telephone as it is encountered in day-to-day living, where lifting the instrument brings the familiar "number please?" or the dial tone. Yet besides this universally recognized service, there are hundreds of thousands of almost unknown circuits and channels furnished by the telephone companies the country over.

Probably the least well known of these are what have been called "dispatch-type services." They are different from your home or business telephone in many ways. The biggest difference is that these particular services do not, in general, connect with other Bell System telephones. In fact, many of them do not even have a telephone or any other Bell System equipment at the customer's office. Each is designed and engineered to fit the customer's requirements, whatever they may be, and protection and maintenance are then built around each circuit, following the general patterns that have been evolved. But always the customer's special problems and service requirements are kept in mind.

Such dispatch-type services cover a broad range of uses. Some—the pipe line networks, electric power grids, and railroad system services—were described here in a recent article.* The others are equally important to us all in our day-to-day lives, but they may not be as well known.

Among the latter are the various services for the Armed Forces, including the facilities in the Air Defense Command and Strategic Air Command networks which would be used to alert our defense forces for

* "Communications for Right-of-Way Companies," MAGAZINE, Spring 1953.

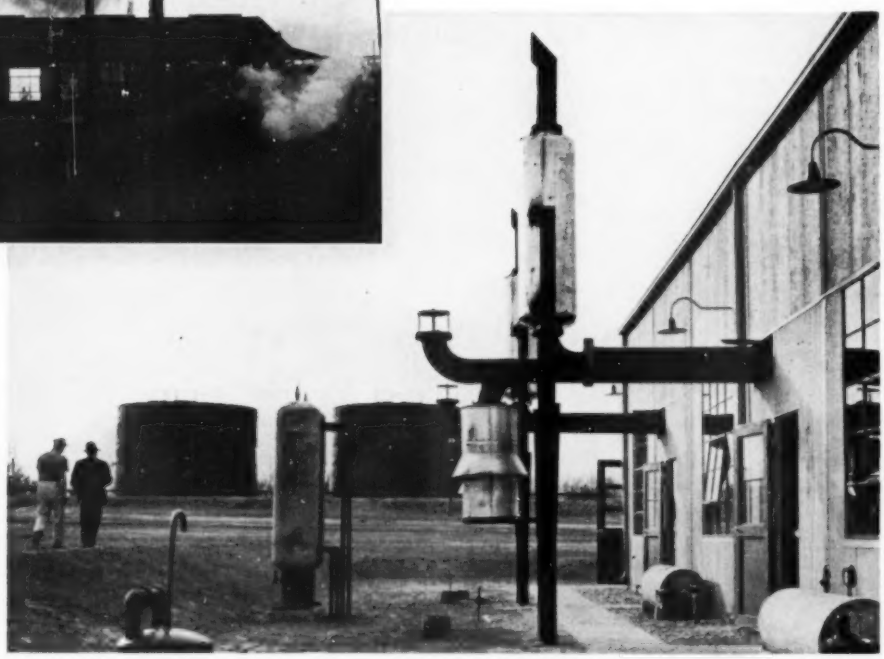


Load dispatchers' boards controlling large electric power distribution networks have supervisory control circuits, telemetering circuits, and talking circuits to important generating and switching stations

warding off attacks and retaliating against an enemy. Some connect radar search locations—constantly on watch for approaching planes—with their direction centers, interconnect these direction centers, and connect them to the filter centers that plot the location of all planes spotted. Others interconnect these filter centers, to assure coördination, and connect some of the civilian airplane spotters at observation posts with their filter centers, to facilitate reporting of plane positions. Still others connect these strategic locations to various echelons of command.

Another group stand ready to transmit the command "Scramble" as waiting pilots and planes are alert to take off and intercept any plane not properly identified. Anti-aircraft artillery command locations are also connected with their batteries and their spotting locations, and other circuits connect them to the air defense direction centers.

Emanating from the Air Defense Control Centers are the Civil and Military Air Defense Warning networks, which are designed to alert the public and those responsible for their safety. Among these are cir-



Pipe line pumping stations, impressive and often remote installations, receive operating instructions from their dispatchers over specially designed telephone circuits

cuits to Civilian Defense headquarters locations in key cities, and the "Bell and Lights" circuits that disseminate the warning from these points to other communities and to important industrial and governmental units within the community. Such important links in the defense chain as siren control circuits and the entire Civil Defense wire line network are included.

Equally important dispatch-type circuits which have for years played a very important day-to-day role in the lives of many are the various services we furnish to the Civil Aeronautics Administration, which continuously guard the air lines so many Americans travel in complete confidence.

C.A.A. teletypewriter circuits spanning the country collect basic weather data. After it is analyzed and assembled, significant weather information and maps are transmitted to airports, where they serve for the guidance of pilots. Specially designed telephone circuits are used to transmit flight plans and coördinate and control the movement of planes in flight. Also

in this category are the circuits to omnirange and other radio beacons and those connecting controllers to the radio transmitters linking them with planes in flight.

Even so brief a listing as this confirms the earlier statement that "dispatch-type services" have a significance for all of us which is far greater than is appreciated by any save those immediately "in the know."

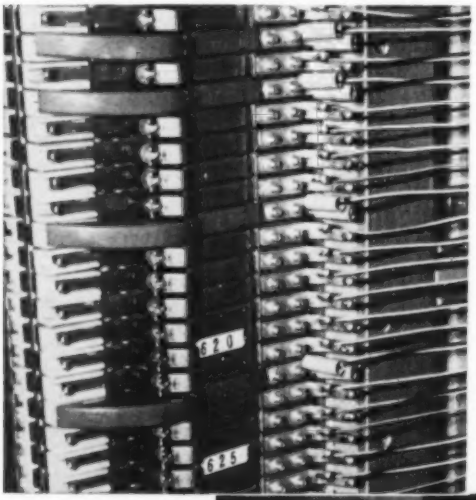
Where They Go

THIS WIDE VARIETY in the kinds of "dispatch-type" circuits and services is only part of the story. The circuits vary greatly in length. At the one extreme is a simple talking circuit perhaps connecting a power dispatcher on one floor of a building with a man who can operate switches on another floor of the same building. At the other may be a far-flung "party line" circuit that connects a pipe-line dispatcher in Texas with "gathering points" in that area and compressor ("booster") stations along the way and with distribution or sales points perhaps 2,000 miles away. Again, there are circuits that

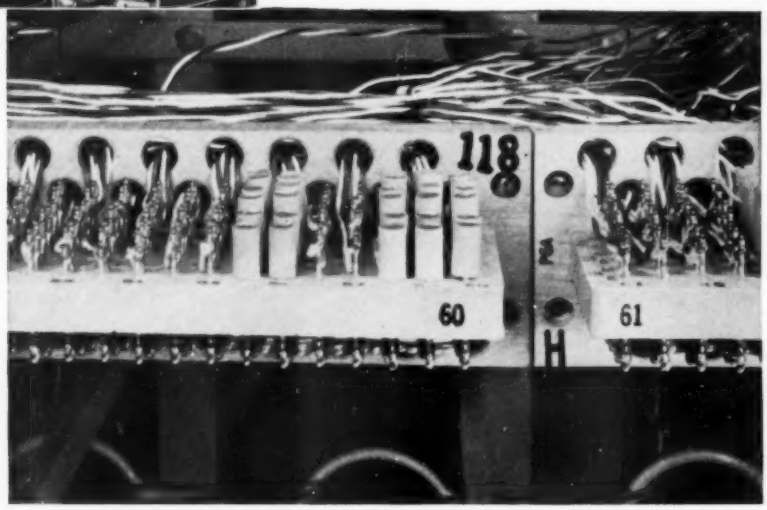
Left: Anti-aircraft gun positions such as these are connected with command and other locations by telephone circuits. Below: An Air Defense Control Center in operation as the General prepares to send out an alert

by means of pulses or spurts of current will read meters a short distance away, and others that by means of similar signals will open and close valves or start and stop motors hundreds of miles away.

The points served are scattered from one end of the country to the other, and in many parts of Canada as well. All manner of places are included: swamp and desert, city and wide-open prairie, mountain top and power dam, remote Armed Forces bases whose very locations are "classified" information, and metropolitan air fields. Some locations are reached only by radio or by a long open-wire line, while for others in highly developed areas there is a choice of many routes. Conditions at these spots also present great contrasts: a comfortable business office, the noisy control tower at an airport, a pumping station where the atmosphere is explosive and the slightest spark would spell catastrophe, an Army installation where the maintenance people must receive government clearances before they are permitted to work.



All these circuits have one thing in common. They must be ready for immediate use whenever they are needed, and they must be free from interruptions and interference. Tele-



Above: Guards placed over protectors and heat coils and split sleeves on terminals of dispatch-type services at a main frame. These terminals will be avoided in routine line insulation testing. Below: Split fiber sleeves on terminals at a distributing frame to prevent accidental contact while working on adjacent terminals

phone people everywhere keep this goal constantly in mind and strive to achieve it—in spite of the elements, occasional human error, and equipment failure.

How do we go about trying to meet this objective of keeping all these circuits constantly ready for customers' use? There are three keys to this: *protection, preventive maintenance, corrective maintenance.*

Protection

WITH TELEPHONE LINES and cables, as with highways, there is usually more than one route between two points and frequently there are several. If a customer has several services between two points, generally some are routed over one of these voice highways and—as a precaution against any sort of tie-up—the others are sent over another voice highway. In any case, plans are made in advance of trouble to reroute or detour each service to another "highway." This is one general form of protection.

Buried and underground telephone cables require protection of a special kind. After these cables are plowed into the ground or placed in conduit, there is no visible evidence of their location, and they seem to be fair prey for all manner of people who are set on digging. Operators of trenching machines and earth moving machinery, oil well drillers, farmers setting fence posts or laying drain tile, highway crews driving markers or doing road construction work, gas and water companies laying pipe—all seem to be drawn toward these cables as iron to a magnet. Preventing damage to the cables and avoiding interruption to the circuits in them is a never ending task.

When underground cables are first run, signs and markers are placed at highway crossings, property lines, and other vulnerable points. Regular visits are made to property owners whose land they cross, requesting them to notify the telephone company before starting any work that might result in damage, and similar visits are made to contractors, highway department officials, other utilities—in short, anyone who digs regularly. Bureaus that issue digging permits are provided with rubber stamps which suggest that contacts be made with the telephone company before digging operations are started.

Some men spend their entire time going back and forth along cable routes, watching for any activities that might cause trouble. In some hard-to-cover areas where there is a great deal of digging activity, airplanes make regular flights over the routes of some cables, watching for potentially damaging operations.

PROTECTION inside telephone offices is as essential as the protection of cables. Much of this starts with the office records that show the assignment of individual services. The records carry special notations and warnings regarding dispatch-type services. These constitute a very important type of protection, as they warn anyone having occasion to consult them of the class of service and the special precautions that must be observed, and are the basis for the protection given these services in the telephone offices.

Every circuit or service is usually made up of a number of components.

Every terminal of each component in the office and at the many cable terminals along the cables, and every "testing jack appearance" of the circuit in the office, is a potential source of interruption, so these various appearances must be protected.

Use of Special Guards

THIS PHASE of protection consists broadly of covering these various terminals and jacks with guards, to prevent accidental contact with them and to warn workmen that these terminals or jacks carry circuits that require special precautions. These guards take a variety of forms and have been designed to fit snugly; but they are also designed to be removed quickly when tests must be made or the circuit must be rearranged. Distinctive colors or shapes are often used to carry a message to the tester.

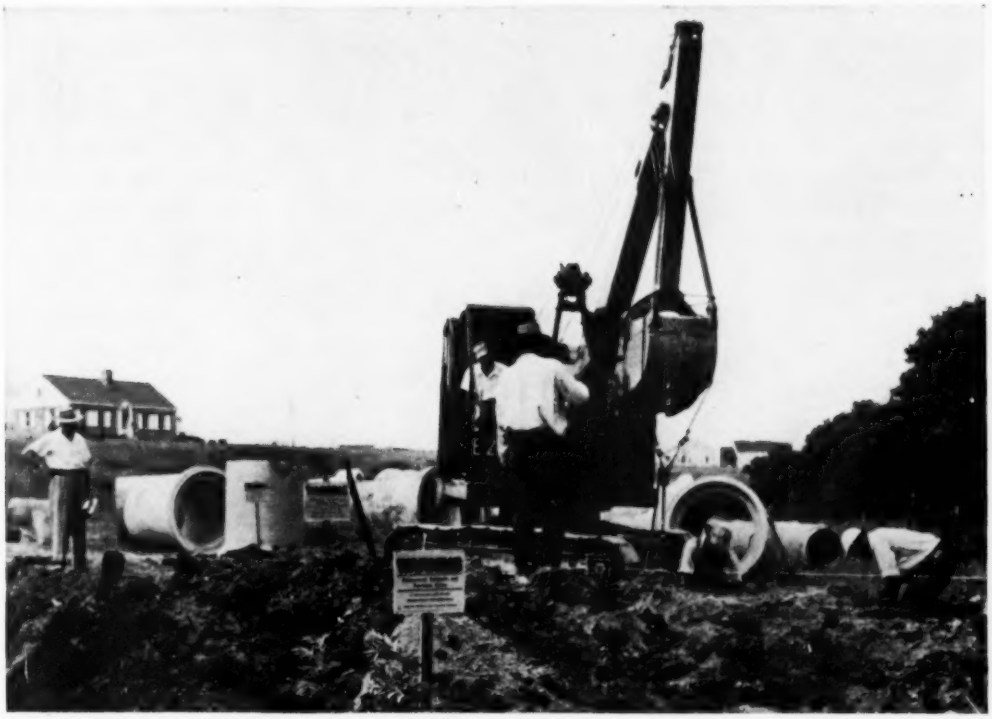
The question may well be asked, "Why single out some circuits for special protection? Aren't all telephone services and circuits important?" Of course all telephone lines are important, and all telephone employees know it! Certain testing techniques, however, are entirely satisfactory for some services and not for others. The special protective measures take into account the special requirements of dispatch-type and other selected services and are not unlike the "stop street" and other traffic signs along the highways. A "Stop. Proceed with caution" sign is quite appropriate on some of these services, where accidental interruption could prevent the transmission of a signal or result in a false signal to equipment controlling some power system or pipe line operation—or at least cause a considerable amount of confusion.

Preventive Maintenance

MANY PARTS of the telephone plant require regular attention, to assure that they are working at their maximum efficiency—or to restore them to that condition. Some of these operations are simply routine preventive maintenance, and are designed to anticipate causes of service interruption.*

Your telephone service uses some facilities that are provided for your exclusive use, and some that are shared with many others. Your telephone instrument itself and the pair of wires that connects it to the central office—if you have an individual line—are in the former category. In the latter are included some of the switching equipment at the central office known as common equipment, the trunks between your central office and others, and the various toll or long distance circuits you may use occasionally. Even the pair of wires assigned exclusively to you is in use less than the entire 24-hour day (though you may sometimes question this), and in between calls it can be "borrowed" for short periods for routine maintenance checks without interfering with its normal use. The same is true of the common equipment, the trunks between central offices, and the circuits between cities. Some of these can be removed from service for hours at a time for routine preventive maintenance checks of one sort or another without causing any telephone user the slightest inconvenience.

* "Finding Troubles before They Happen," MAGAZINE, Winter 1952–53.



Warning markers have been placed along the cable route, and a telephone man stands by to assure that the digging is carried on without damage to the buried cable

Now let's take a look at the dispatch-type service customer. All of the facilities provided for him are provided for his exclusive use. There is no common equipment in a central office that helps him on demand and then is free to serve someone else, no long distance circuit between cities that may also be used by others. There is no chance to "borrow" these dispatch-type circuits for short periods for preventive maintenance activities—at any rate, not without obtaining the customer's permission in advance.

Special service or no special service, however, preventive maintenance is necessary. In fact, to help assure continuity of service is perhaps particularly important on these dispatch-type services. How can these limitations on the activity be overcome? The various protective devices used on these circuits serve as a red warning flag to the maintenance men that special maintenance procedures are necessary.

When line insulation tests are made, for example, other pairs give indication of the condition of the dispatch pairs so the latter can be skipped. When tests and adjustments must be made on long intercity talking circuits, with their many intermediate repeaters, another similar circuit can be substituted temporarily without interfering with the customer's service. There are instances, however, where this sort of thing is not feasible: on control cir-

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cuits, or when signaling equipment or other such equipment at the customers' office is involved. Then the customer's coöperation is enlisted, and the work is done during a normally quiet period; or men stand by, ready to perform the functions otherwise performed by the equipment or the circuit. The continuity of service must be maintained, by whatever expedient.

Warning Flags

SOME PREVENTIVE maintenance involves working at points where there is no "stop street" sign or red warning flag. For example, in heavily built-up areas, an underground cable may be damaged over the years by electrolysis, and it may become necessary to transfer all circuits to a new section of cable. This entails individually identifying each pair, in turn, at the splices at the ends of the section and substituting a selected pair in the new cable for the pair in the old cable. When minor disturbances incidental to this work could interfere with a customer's service, every attempt is made to notify him so that he too can take whatever precautions appear desirable.

Telephone facilities of all sorts are in a continuous state of change. People are constantly on the move and telephones must be disconnected and reconnected. New cables are being placed, old cables extended, and central offices are being expanded or rearranged in an effort to keep up with the desires of customers for more and still more telephones. All of this means constant activity of one sort or another in just about every part of the telephone plant. These additions and rearrangements could mean possible serious trouble—were it not for the protection that has been applied on frames and in cable terminals warning workers of the presence of these dispatch-type services and protecting them from accidental contact.

Corrective Maintenance

THIRD OF OUR specific topics, *corrective maintenance,* involves fixing the troubles which do happen. Here is where all our advance planning pays off; because—in simplest possible terms—when the difficulty has been located, another circuit is quickly substituted for the one or portion of one which is in trouble.

It doesn't always work out that way, of course. For there are troubles which must be cleared up before a customer's service can be restored. The every-day sorts of troubles are relatively easy to contend with, however, if everyone has been diligent in his planning and preventive maintenance undertakings. A tree blown down across the line, lightning troubles, a relay that unaccountably sticks, a bullet hole in a cable, and countless other such troubles are all in the day's work.

While the trouble is being repaired, the adverse effect on the customer's operation can frequently be minimized. Perhaps calls can be relayed by telephone company personnel, or certain operations normally controlled remotely can be performed manually. One of the secrets of assisting the customer in handling his operations during periods when we may be unable to furnish him normal service is a good knowledge of how he uses the telephone company fa-

Cable splicers in a manhole cutting-in a new section of cable. Careful work and close coördination are required here not only to avoid interference but to match the circuits with absolute accuracy

cilities that have been temporarily interrupted.

There are other happenings, however, that are harder to contend with: a widespread ice storm, a hurricane, a severe flood, a landslide that sweeps all in its path with it. Any of these covering wide areas or occurring in critical concentrations of facilities tax the ingenuity of telephone people everywhere and offer a special challenge to the control offices of the dispatch-type services.

A good knowledge of geography and a mental picture of the major Bell System facility routes are valuable at a time like this. All-out emergency measures are in order. Circuitous routes, akin to the detours encountered during major road construction, are the order of the day. Circuits are "borrowed" from their normal day-to-day usage of handling long distance calls and are used to piece together remaining sections of the affected dispatch-type circuits. Wire hastily placed on the ground or hung on any available structure may be used to bridge gaps to restore an interrupted circuit. Emergency radio equipment may be brought into play, or a radio-telephone-equipped car may be used if occasional local or long distance calls will enable the customer to maintain operations.

A Continuing Challenge

THIS COMPOSITE PICTURE may give some understanding of the problems involved in handling this general class of Bell System service. These services in particular must be tailored to fit the specific requirements of the customer, and we must never lose sight of the customer's special problems and requirements. Bell System

service means attention to the specialized protection and maintenance requirements of these customers. The special-service field is one that is fast developing with the country's industrial growth and the increase in mechanization. The greater use of the electronic art by the utilities, the railroads, the airlines, and all branches of the Military is giving the telephone companies an ever-increasing opportunity to demonstrate their ability to meet the specialized protection and maintenance requirements of these dispatch-type services. It is a challenge particularly to all Plant people to continue to demonstrate the meaning of Bell System service.

Readers who saw this illustration on the back cover of our last Summer's issue may be interested in the following note, which is from the A. T. & T. *195 Bulletin:*

"A lot of work and planning goes into most advertising, but the recent Bell System ad, 'Woven Into the Fabric of the Nation,' probably set a record for skill and patience when it was decided to use a symbolic needlepoint tapestry for the illustration.

"Mrs. Faith H. Child, Jr., a housewife in Merion, Pennsylvania, was selected to do the needlepoint and was given a drawing to use as the design. With her deadline only six weeks away, and with three children to care for, Mrs. Child worked out a budget for her time to finish the job on schedule.

"The whole thing was worth it, too, for the Bell companies have had many requests for the pattern and even for instruction in the ancient art of needlepoint. The ad has been altogether an effective one, and has done its work exceptionally well."

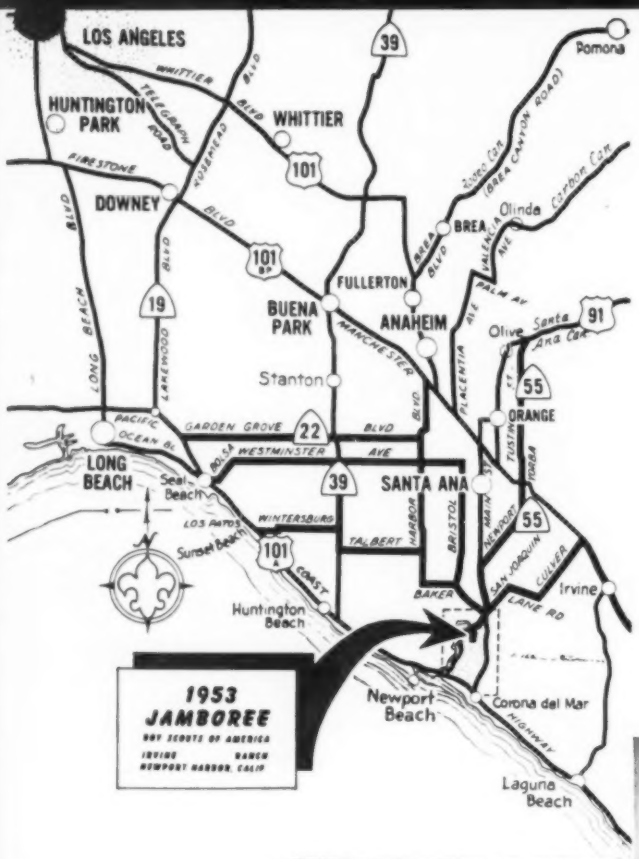
Building to Serve A City for a Little While

PROVIDING *for just 23 days of service* a telephone system which handled an average of more than 10,000 calls a day was the job which the Southern California Area of The Pacific Telephone and Telegraph Company completed in stride for the Third National Jamboree of the Boy Scouts of America, held last July on the historic Irvine Ranch near Newport Beach, Calif. It was the biggest such event ever, with nearly 50,000 Scouts in attendance and with visitors numbering more than 100,000.

Months of careful planning, engineering, and construction went into the installation of 32,000 feet of cable from the nearest main route to and within the camp, location of 56 public telephone booths and five attended public telephone centers, and connection of a six-position PBX administrative switchboard serving some 250 telephones. An efficient "locator" service kept tabs on Scouts and camp administrators; a telephone call for a Scout was accepted on a "call back" basis and a message was sent to him to return the call through one of the camp's telephone centers.

Nearly 100 telephone operators and supervisory personnel were required to handle calls on the switchboard and to staff the "locator" center. The girls lived in tents at the camp site, and a comfortable "living tent," complete with television, was provided for them.

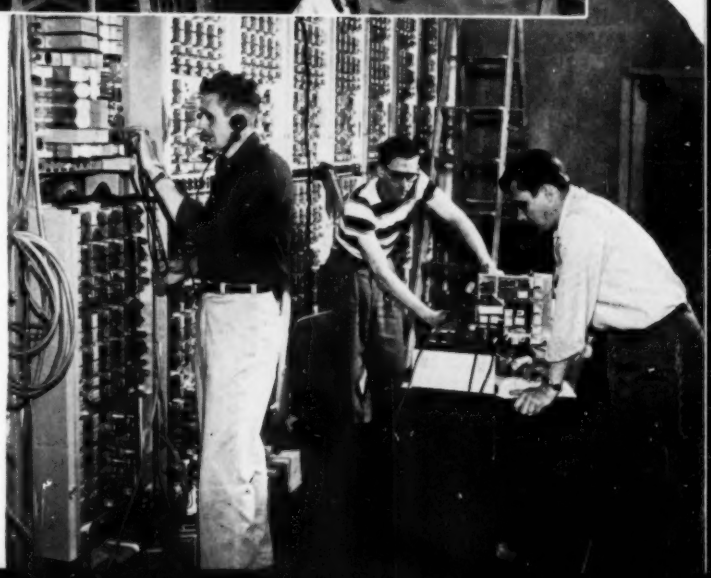
There have been other Jamborees: one at Valley Forge, Pa., in 1950, and the earliest of all at Washington, D. C., in 1937. In all probability there will be others in the years to come—and Bell System companies will accept similar demands for brief, essential telephone service for Scouts and other groups having special needs, no matter where. The Boy Scout emblem which heads this page bears a motto to which telephone people are no strangers: Be Prepared. The next several pages show how some of those people discharged that obligation in California in July of 1953.



Near Newport Harbor, a few miles from the coast of Southern California, stands the Jamboree campsite of 3,000 acres. It is a part of a 100,000-acre ranch which dates back to the land-grant system of the Spanish-Mexican regime and has been in the possession of one family for more than 80 years. Miles of water and sewage mains, electric light and power lines, and inter-camp roads were constructed, as well as the complete telephone system

Plans for a telephone system to serve the Jamboree were begun almost a year in advance, when C. L. Wall, Pacific Telephone Company commercial service engineer, met with Ray Bryan, B.S.A. director of physical arrangements for the encampment, to discuss communication requirements

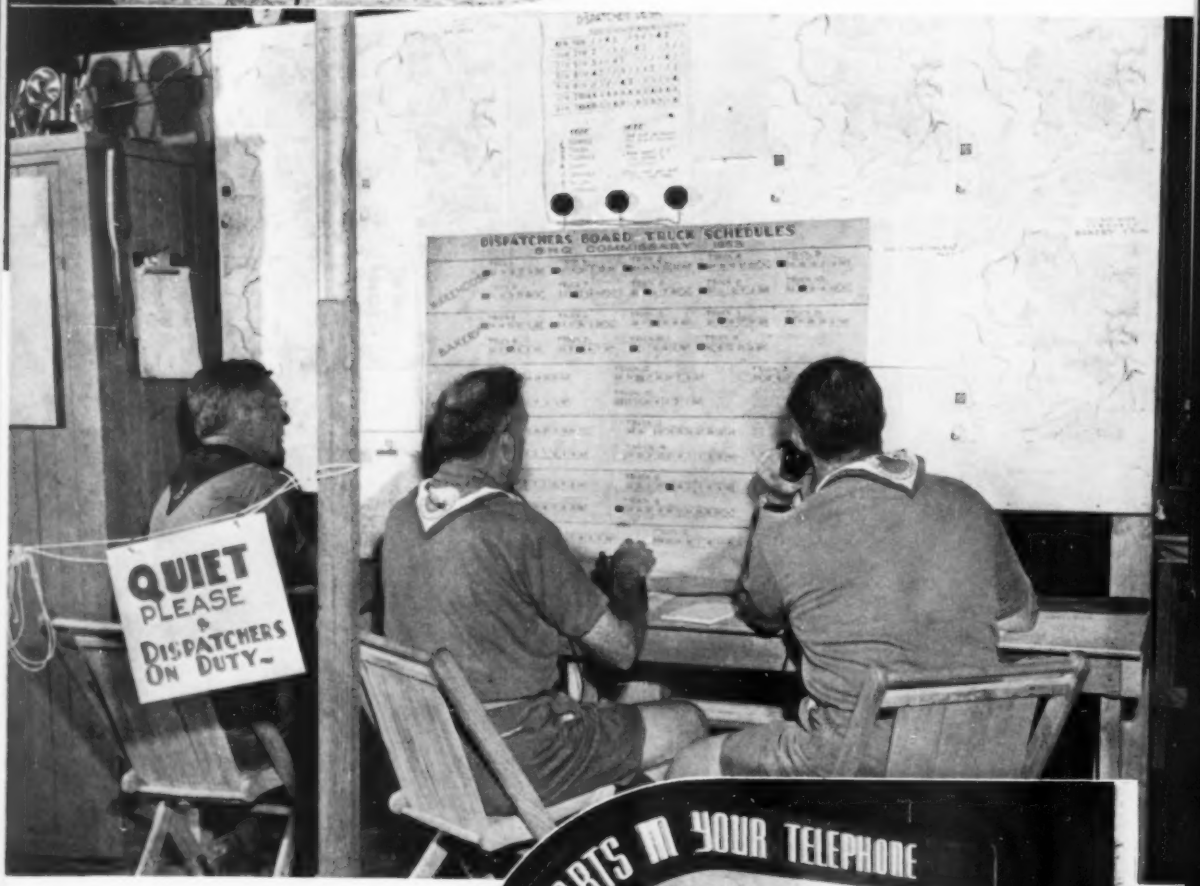
Interdepartmental meetings such as this (above) co-ordinated the responsibilities of all departments. Right: The addition of 18 N-1 carrier systems between Los Angeles-Riverside and Los Angeles-Santa Ana was speeded up and expanded to meet Jamboree needs



Nearly a hundred operators and supervisory personnel were on hand to attend the six-position switchboard (above), the "locator" center in the telephone building (below), and the public telephone centers. Camp life for the girls included doing their own laundry

Five public telephone tents were spaced throughout the encampment. Traffic and Commercial attendants were on duty till 11 P. M., and Scouts used the facilities to make long distance calls home as well as to locate relatives and friends in Southern California. The messenger at the right is being dispatched to find a Scout who is wanted on the telephone and who will complete the call by calling back from a public telephone tent

These mobile transmitters beamed television signals to 5,000-foot Mt. Wilson, 48 miles away, and thence into regular television channels. Below: Telephones were essential to the administration of the huge enterprise. Commissary headquarters, for example, used three telephones to dispatch its trucks



Right: Scouts waiting in public telephone tents to complete their calls gave the different telephone exhibits keen attention

"Mother Bell" and this Liberty Bell (in replica) joined forces to welcome telephone people whose scout duties brought them to the shores of the Pacific. Left: Scoutmaster H. H. Short, of the Ohio Bell, Dayton, is greeted by Santa Ana District Traffic Superintendent A. W. Gazlay

Above: Newport Beach Manager T. M. Hambrook welcomes Long Liners C. Y. Murphy, Allentown, Pa., J. J. Schmink, Cleveland, O., and P. E. Littlefield, New York, N. Y. Right: Scoutmaster G. R. Leathers, of the Southern Bell, Danville, Ky., is greeted by C. L. Wall, commercial service engineer, Los Angeles, who was responsible for co-ordinating all Jamboree telephone arrangements

Above: These 59 Bell System employees, attending the Jamboree as scout leaders, assembled near the general headquarters of the encampment for this picture. All told, nearly a hundred Bell men participated as scouters. Below: Evening ceremonies such as this brought the scouts together in the natural amphitheatre by massed thousands

Needing to Hire 132,000 Women in 1953, the Bell System Finds that Teamwork among Employees Provides "Leads" Which Are Helpful in Obtaining Qualified Recruits

Recruiting Employees Through Employees

Peter B. Howell and Clifford J. Hedin

RECRUITING THROUGH EMPLOYEES is a form of teamwork as effective and satisfactory as any that exists in the Bell System, where teamwork of many kinds is part of the daily operation of the business. As part of an organized program, telephone people recommend their relatives, friends, and acquaintances for telephone work. Those who qualify are hired. The new employee has a job. The recommending employee has helped his or her friend get a job. The company has a new employee who has a tie to the business—and everyone is happy.

This may well sound like oversimplification. As a matter of fact, it is. Nevertheless, that's the plan in brief. Now let's take a look at the total problem to see just how recruiting through employees fits in.*

This year the Bell System will hire 132,000 women. While this is not the largest number required in any one year, 1953 will go down on the record as one of the biggest employment years. For those who have the recruiting responsibility, moreover, the number is far larger than that. The telephone company does not need simply employees; it needs *good employees*. So that proper selections can be made, it will seek some 700,000 applicants.

New employees are needed for many kinds of telephone jobs. Telephone operators comprise the largest single group of women employees. Including the supervisors in the central offices, the operating force totals 255,000. This is an all-time high,

* Both men and women are recruited through this plan. However, as most of the new employees are women, this article deals only with them.

despite dial and other forms of modern mechanization. There is need also for clerks who process customers' telephone bills and for others who prepare the paychecks; for typists and stenographers; and for representatives who handle business-office contacts with the customers. Telephone women hold a wide variety of interesting and important jobs.

Need for Recruiting

IN A very large number of communities, in all sections of the country, the day is gone when applicants for employment arrived at the office of the telephone company spontaneously, without any specific effort on its part to bring them in. Business-wise, the present is an extremely active period. Competition for good employees is keen. If the telephone company is to continue to do a good job in serving the public, it must carry on adequate and sustained programs to attract applicants for employment. Most of the new employees are needed in localities where expansion has been the greatest and the employment situation is the most critical.

During and immediately after World War II, Bell System men and women did an outstanding job in recruiting large numbers of women employees. Many lessons were learned, and they have now been brought back into play.

But conditions in the employment field do not remain static. Other employers are also "working at the trade." The Bell System, then, with a big employment job facing it, has had to develop new ideas and techniques of employment.

The recruiting program in a given community is based on the needs in that community. Some localities are more seriously affected than others. Where an all-out program is required, the telephone company goes at the recruiting job in a variety of ways.

Recruiting Through Schools

RECOGNIZING that each year the high schools of the country graduate thousands of girls who make fine employees, employment representatives of the telephone companies work closely throughout the school year with vocational guidance counselors and other school officials. In frequent visits to the schools, they discuss employment opportunities in the telephone company, and provide carefully prepared and attractively illustrated booklets and reference material. Other activities include the showing of specially prepared movies in the schools, talks to students, and "open house" affairs at the telephone offices for teachers, students, and their friends.

Telephone people, knowing that school officials often want assistance from industry in meeting school needs, always indicate their willingness to coöperate in other ways too. This help may, for example, consist of supplying informative booklets and movies on specialized non-employment subjects for use in science classes. Some schools like to have a qualified speaker talk to seniors on how to apply for jobs and how to conduct themselves during employment interviews. Material on good telephone usage, beneficial to all students and particularly those taking commercial courses, is also supplied.

A Plant recruiter interviews cable men on the job

Telephone companies often help the schools also through "coöperative education." Under this plan, a student goes to school part of the day and works part of the day, and school credit is given for the work experience. Many high-school seniors work as part-time operators—for example, a few hours after school and on week-ends. School needs come first, of course, and each case is cleared with school authorities to make sure there will be no interference with school work. Such girls are frequently employed for other than telephone operating work.

There are real advantages to this plan of part-time employment. The company gets good employees, training peaks at graduation time are minimized, the student is sure of a job after graduation, and—of great importance to her—she has spending money in the meantime. The fact that part-time high school employees are good recruiting missionaries for the telephone company in the schools is important in itself.

Altogether, very happy relationships exist with the schools. It is good for the students, the schools, and the company.

Reaching the Public at Large

BECAUSE the average person who is looking for a job turns first to the want ad page of the daily newspaper, classified newspaper advertising is

used as an important recruiting tool. Occasional display advertisements support the copy on the classified page. Other media sometimes used to attract the public at large and to back up the other forms of recruiting include radio, television, window displays, car cards, bill inserts, and the like.

Such media, which reach very large numbers of people rather than special groups, bring in a miscellaneous class of applicants, with a consequent lower percentage of those who qualify for employment.

DURING the last ten years, about a million women became alumnae of the Bell System. Many left to get married, while others resigned because of some domestic situation. Moving to a different town is a common cause of resignation, and if there are no vacancies in the new community at the time, the employee is lost to the telephone business.

Systematic procedures have now been established for communicating with qualified former employees and offering employment to those who wish to resume their work. Many former employees, it is found, are not aware of the company's current employment needs, and welcome an occasional call from "Mother Bell." A serious endeavor is made to arrange for part-time work, in cases where this fits better into home conditions than a full-time job.

Recruiting Through Present Employees

OF ALL THE METHODS used by the telephone companies to obtain new employees, the best by far is the plan of recruiting through those already on the force.

A headquarters group discusses recruiting of telephone people

A recruiter covering the background of employment needs through a "flip chart" discussion with a group of fellow-employees

Bell System people like their work. So, when the word gets around that the company needs new employees, those who do the hiring find that many applicants are applying because a friend or a relative sent them in.

Unfortunately, the numbers so applying are not nearly enough to meet the needs in most of the places where new employees are required. But it has been discovered that the employment potential among the System's force of about 600,000 employees is great, and that when there are thorough-going efforts to make the most of the total potential, very large numbers of new employees, *good ones,* can be acquired.

The answer, then, is the all-department plan of recruiting through employees. Many of the characteristics of this plan are familiar to telephone people when they find there is an important job to do.

The plan discussed here is a systematic, organized, company-wide approach—as contrasted with the unstimulated and casual plan of recommending relatives, friends, and acquaintances for telephone work, or with spasmodic efforts within a department that has openings. It requires considerable education, careful planning, hard work, and, of course, expense. The results, however, more than justify the time and money spent.

Everyone, regardless of position, participates. There are many examples of ways in which the employees have demonstrated ingenuity and resourcefulness in developing prospects. One engineer telephoned forty-five teen-age pupils in his

church school class, to tell them, and some of their parents too, about openings with the telephone company. A Plant man, returning to his home town, spoke to the graduating classes of both the public and parochial high schools about job opportunities with the company. A telephone operator, while helping out with a party for her daughter's high-school friends, "signed up" six well-qualified graduating seniors.

A department head learned in a casual conversation that the daughter of a friend was about to be graduated from college. Normally, perhaps only polite interest would have been shown—but not so this time. He inquired promptly about her plans, explained job opportunities with the telephone company, supplied a card of introduction to the employment office, urged a prompt visit, and the girl is now a service representative, handling contacts with the public.

Successful recruiting brings to everyone a great personal satisfaction in accomplishing something really worth while.

The Minneapolis-St. Paul Program

A GOOD WAY to see how this kind of recruiting program works out in detail is to take the case of the Twin Cities of Minneapolis and St. Paul, in the Minnesota Area of the Northwestern Bell Telephone Company. In these two important communities, 5,500 telephone men and women have been and still are aiding enthusiastically in the solution of one of the most serious problems their company has faced: securing adequate numbers of well-qualified women for telephone jobs in all departments. While helping the company meet its responsibilities, the forces in turn have benefited through the securing of capable employees—"the kind of people they like to work with."

For several years a gradual but steady tightening of the employment situation had been felt. As time went on, it became obvious that all the usual means for obtaining applicants would not be adequate to meet the company's total needs. A plan for recruiting through employees was in effect, but was not nearly as thorough-going as the expected needs for new employees required. When it was decided substantially to expand the program interdepartmentally, a man to head the activity was selected, and a review of programs already in effect in other parts of the Bell System was made by visits to those localities and with people in the A. T. & T. Company's Department of Operation and Engineering.

As a result of all these visits, it became clear in the Twin Cities that:

(1) *if maximum results were to be achieved, all men and women—management and non-management—in all departments must participate;*

(2) *departmental participation must be motivated by the needs of the company as a whole and not by departmental requirements, since there is a wide difference in need between departments; and*

(3) *a complete understanding of the employment problem among all employees must be established by giving them as much background as possible.*

District traffic superintendent, chief operator, and recruiter review a "visual aid" chart which is an important tool in the recruiting program

Organizing to Produce

ONCE A BASIC PLAN of operation had been developed, and had received executive approval, committees were created to put it into operation. These had, among them, responsibility for over-all policies and procedures, and for telling every employee what it was all about.

The big—the fundamental—step came with the appointment of 35 full-time "recruiters." These people, both men and women, are all from craft groups, and all principal departments have their own recruiters, to work with their own people. The recruiters have, of necessity, enthusiasm, tact, sales ability, and the respect of their fellow workers. The work was new, however, and they needed special briefing on the employment program, the techniques of interviewing, qualifications for starting jobs, and the work of the employment offices. Once those matters were out of the way, the recruiters organized themselves into teams, and are operating in the spirit of friendly competition.

The unique feature of the plan is the function of the recruiter. For they make their contacts not with prospects for employment but with fellow employees. The object is to have present employees refer good prospects to the nearest or most convenient point of hiring, at the same time giving their names to the recruiter to follow up.

This is the crux of the program. This is where the real work is done.

The recruiters began their work with a series of meetings with employees, in groups of six to ten each, to explain the need for large numbers

it takes a lot of people
FOR A GROWING TELEPHONE SERVICE
Opportunity for You
IN A VITAL SERVICE
A friendly place to work
THE OHIO BELL TELEPHONE COMPANY
What does a Telephone Job Pay
Have you told your friends?
Girls who like people like telephone work

Posters and leaflets are used throughout the Bell System to remind employees of the opportunities for their friends to become fellow-employees

of new employees, and the company's employment policy. Interesting "flip charts" were used to tell the story, and at the close of the meetings an attractive pocket case was given each employee, in which to carry a supply of introduction cards for prospective applicants. Then the plan of interviewing employees individually was started, and since then each employee in the Twin Cities has been interviewed once a month by a recruiter.

A common question for an employee to ask a recruiter at the start of an interview is "What else is the Company doing to attract people?" All of the other measures are then explained, and it is shown how the program of recruiting through employees fits into the recruiting program as a whole.

Recommending Prospective Employees

THE REAL SUBJECT of the interview, however, is *recommending prospects*. Perhaps, if you are an employee of the telephone company, what you are doing right now is thinking of just how many good applicants you could actually send in. The answer, in some cases, may be none. If you have just graduated from high school, you may know several. But many employees are past this stage. Don't think, however, that this discourages a recruiter. Here is where his or her training, ingenuity, and experience come into play.

Your recruiter will probably start by asking you to think first about possible prospects among your relatives, friends, and acquaintances. Then he may ask you if you belong to a bridge club, church group, bowling team, or other social group. Next, he will start you thinking of various other contacts you might have: for example, the beauty parlor, the service station, or the corner store. The big point is to develop an awareness of the possibilities of recruiting. The recruiter won't be surprised if you don't think of a prospect immediately. He will suggest, though, that you start thinking and looking, and he is likely to say he'll be seeing you soon.

These interviews are on company time. They are not merely "contacts," but sessions lasting, upon occasion, up to as long as half an hour. In order to help individual employees participate effectively in the plan, the recruiters naturally do a great deal of listening to questions that are asked. And they do their best to supply answers, so the employee will have a personal desire to supply applicants and an automatic sensitivity to potential prospects.

When an applicant is either hired or rejected, the recruiter is notified, so that he may notify the employee who originated the contact. The fact that new employees are carefully selected is made clear, so that present employees will understand that if their prospect is rejected, it is only after careful consideration.

Helping the Recruiters

THE RECRUITER, being the key person in the program, needs plenty of help and support beyond his initial training. Technical guidance is obtained from a recruiting supervisor. However, since recruiters receive their day-to-day supervision from their own bosses, the bosses have to

keep abreast of the program and be actively interested in it. Recognition by management of the efforts of all employees—individuals and groups—is just as necessary in recruiting as in other activities in which the company is engaged.

Recruiters are also helped substantially when they get together with other recruiters to discuss their work, and "experience" meetings are held each week. Since each team has interdepartmental representation, there is a wide difference in the work experience of its membership. It is not an unusual comment that recruiters and the employees both learn a great deal about operations in all departments through this program.

Analyses of results, both from a measurement of actual "hires" and from the standpoint of employee participation, are reviewed in these meetings. Discussions of ways of obtaining greater employee participation have led to continual improvement; in some groups, 100 percent participation has been achieved.

Bulletin board posters, stories in company magazines, and other publicity are helpful to recruiters. To maintain the interest of the employees, recruiters present inexpensive reminders to employees several times a year. These include items such as book matches, hosiery mending kits, plastic card cases, packaged emery boards, pencils, and other gadgets. The cost is low, the good will is high, and a timely recruiting slogan is ever present.

Results

EVERYONE wants to know, of course, how the plan is progressing. To meet this need, a weekly flash report, covering the results obtained by each recruiter and each team, shows the number of employee interviews, applications, and persons engaged. Monthly results are reported by individual recruiters, teams, force groups within the departments, and departments as a whole. An index showing the number of women engaged per 100 employees, for the various groups and for the current and cumulative period, is used. All of the reports are widely circulated, and bulletin board posters are also used to announce the results.

Another significant feature of the plan is the weekly discussion of results and developments in the vice president and general manager's meetings with his department and staff heads. These men are well informed of the progress of the program, and of such opportunities for further improvement as may exist. As a result, recruiting becomes an important subject of discussion at subsequent meetings at all levels in the organization.

In the nearly six months since the all-out program was inaugurated in the Twin Cities, great progress has been made. All force losses have been replaced and growth has been taken care of. What is more, instead of the very substantial shortage of employees which existed at the time, there is now a current "fill" of all positions—and that despite a most critical employment market. Moreover, it has been found that the quality of these recruits is far higher than those brought in before, and that force losses among them are substantially lower.

RECRUITING THROUGH EMPLOYEES, on an organized basis, has become a "way of life" in many parts of the Bell System. The Minneapolis–St. Paul story is simply a typical one. Programs of this kind will certainly be continued as long as operation of the business requires the addition of sizeable numbers of new employees. If the needs ever subside, employees will continue, but without an organized program, to recommend their friends, as in the past; and in a business as large as the Bell System, many will still be employed.

While the plan has as its main objective obtaining new employees, there are other benefits as well. For when a recruiter talks with a fellow employee about recommending a candidate for employment, the value of a telephone job naturally figures in the discussion. Employees often find that they have a much broader view of the telephone business than they ever had before. And when employees start thinking of the advantages of telephone employment, another look at their own jobs may have an important effect on the reduction of force losses all around.

In successive issues of the British Post Office's *Telecommunications Journal* have appeared installments of "The American Telephone System," an article by William H. J. McIntyre, Telecommunications Attaché to the U. S. Embassy in London. The article's concluding paragraph is the following:

"Let me close on a light note. A little while ago I extracted something from the records of 40 years ago. While searching for it, by accident I came across a mention of Maxwell, the great British scientist, which I feel I should pass along to you. It appears as merely another lawyer's dry question and witness's equally dry answer; and neither lawyer nor witness intended to be amusing. In fact, read on United States soil, I doubt that they would seem even remotely so. But they do read quite differently here on English soil. Just listen to this unwitting gem, mined 40 years ago in the staid atmosphere of a Pennsylvania court room:

"Q. 'Who developed phantom circuits? You said it was known from the time of Maxwell. Was Maxwell a telephone man?'

"A. 'No. Maxwell was kind of the father of all modern electrical science. I do not exactly know how to describe him. He was an Englishman.' "

Telephone Excise Taxes Discussed with House Ways and Means Committee

THE CONCERN with which the Bell System companies regard the present high Federal excise taxes on telephone service was brought to the attention of Congress on August 10, 1953, by Mark R. Sullivan, President of The Pacific Telephone and Telegraph Company.

Appearing before the tax-writing Ways and Means Committee of the House of Representatives, and speaking for the entire Bell System, Mr. Sullivan pointed out that the price which our customers are required to pay for telephone service is considerably increased by the heavy Federal excise taxes which apply. He noted that, while the telephone companies undertake to keep their rates as low as possible consistent with finanical safety, when it becomes necessary to increase the net income of a company, provision must be made for Federal income tax and, on top of that, the excise taxes must be added. As a result, telephone charges must be increased as much as $2.60 in order for a company to retain $1.00 as net income. This is illustrated by the chart shown on the opposite page.

Mr. Sullivan summed up his position as follows:

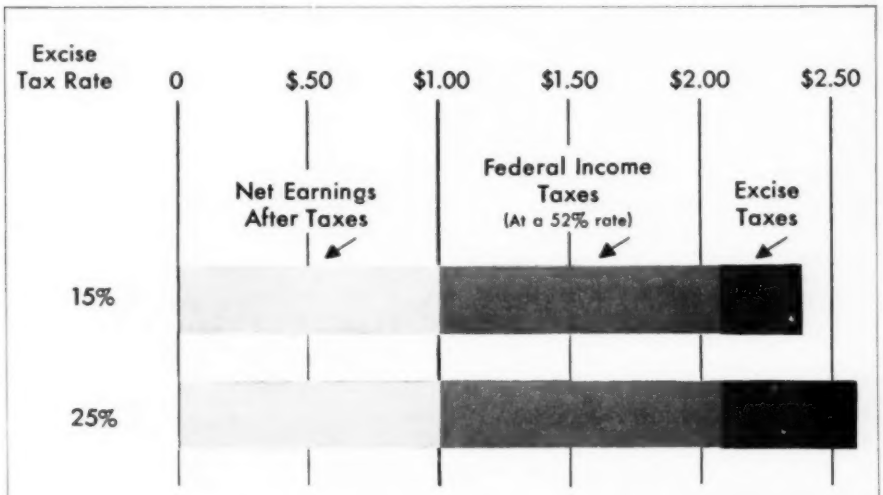
1—Telephone service is a necessity to our modern way of life, yet it bears an unreasonably high and burdensome Federal excise tax.

2—Of the four essential household utility services—water, gas, electricity, and telephone—only telephone service is subject to any Federal excise tax.

3—The objectionable discriminatory aspects of telephone excises are more sharply revealed in light of the fact that they are at a higher rate even than those imposed on most luxuries.

4—The present Federal excise tax rates were enacted under conditions which no longer prevail and under present conditions should not be continued.

5—Any reduction in telephone excise taxes would accrue immediately and directly to the customers—no part of the tax saving could be retained by the telephone companies.



Under present Federal tax rates, the customer must pay up to $2.60 to provide the company with $1.00 of additional net earnings

Telephone rates must be increased a minimum of $2.08 in order for the company to retain $1.00 after Federal income taxes. This increment is inescapable because 52 per cent (or $1.08) of the $2.08 goes to the Federal Government as income taxes. Then the customer must be charged excise taxes on the entire $2.08. Thus, where the 15 per cent excise tax rate applies to the $2.08, the additional excise tax is 31 cents; and where the 25 per cent rate applies, it is 52 cents. The end result is that the customer must pay from $2.39 to $2.60 in order for the company to retain $1.00 as additional earnings.

Strong opposition to the excise taxes on communications was also presented to the Ways and Means Committee by representatives of the United States Independent Telephone Association, the National Association of Railroad and Utilities Commissioners, and the Communications Workers of America—CIO.

The Bell System's Manufacturing Unit Has an Important Share in Helping to Overcome the Effects of Inflation On the Cost of Providing Telephone Service

Western Electric's Part in Offsetting Rising Costs

Howard G. Anderson

WHEN Civil War General Bedford Forrest drawled his oft-quoted dictum about winning battles by "gittin' thar fustest with the mostest," he phrased in homely language the practice that since has been given the imposing title of "logistics." But whether it was colonial housewives sneaking food and bullets to their kinfolk behind stone walls, or our well-meshed land-sea-air supply lines of World War II, the supply function has always assumed A-1 importance in any military campaign.

The "Battle of Rising Costs" which the Bell System has been waging against inflation for the past decade is not unlike a military operation in certain respects. Both require careful advance planning, resourceful leadership, close-knit teamwork, and, last but by no means least, efficient supply—or logistics. And that's where Western Electric comes in. As the System's manufacturing and supply unit, Western undertakes to furnish the Bell companies with the equipment and supplies they want, *where* they want them, *when* they want them. Furthermore, the telephone materials Western makes or buys must be able to give telephone company customers the best possible service at the lowest cost possible.

Western Electric has not been alone in this fight on inflation, of course. Bell Telephone Laboratories, the American Telephone and Telegraph Company, all the operating Bell companies, and Western have tackled the problem as a team, each one helping the other, finding ways to overcome problems jointly that could not be accomplished individually. Their combined objective is to expand the telephone system as rapidly as possible in order to take care of new requests for telephone service; to continue to furnish the best and most dependable telephone serv-

ice at rates that are as low as possible consistent with financial good health; and to do these things in spite of the inexorable rise in the cost of providing service.

The battle is not over, but gains have been made. Operations have been streamlined, better ways have been found to do the job, costs have been trimmed on every side. Without the efforts made by all the Bell companies in the past few years, the System could not have continued to expand and improve the telephone plant and kept service at its high level despite the adverse effects of inflation on Bell System earnings.

Western Electric Is in the Thick of It

WHILE WESTERN ELECTRIC has not been alone, this matter of logistics has put it squarely in the middle of things. Let's take a roving look at a few examples of what has been done on a broad scale throughout Western Electric since 1946 to reduce costs and step up efficiency in the supply end of the telephone business.

Take copper-clad steel wire, for instance. That's the conductor inside the "drop" that runs from your house to the nearest telephone pole. That's the wire that Western produced last year in the amount of one billion two hundred million feet.

Western formerly purchased the conductor wire for this purpose from an outside source. Then the Bell Laboratories-Western Electric team worked out a process for producing a superior wire at a lower cost per foot. Result was wire with the ability to support a heavier load of ice, and not only stronger than the old type but smaller in diameter, and so needing less insulating material.

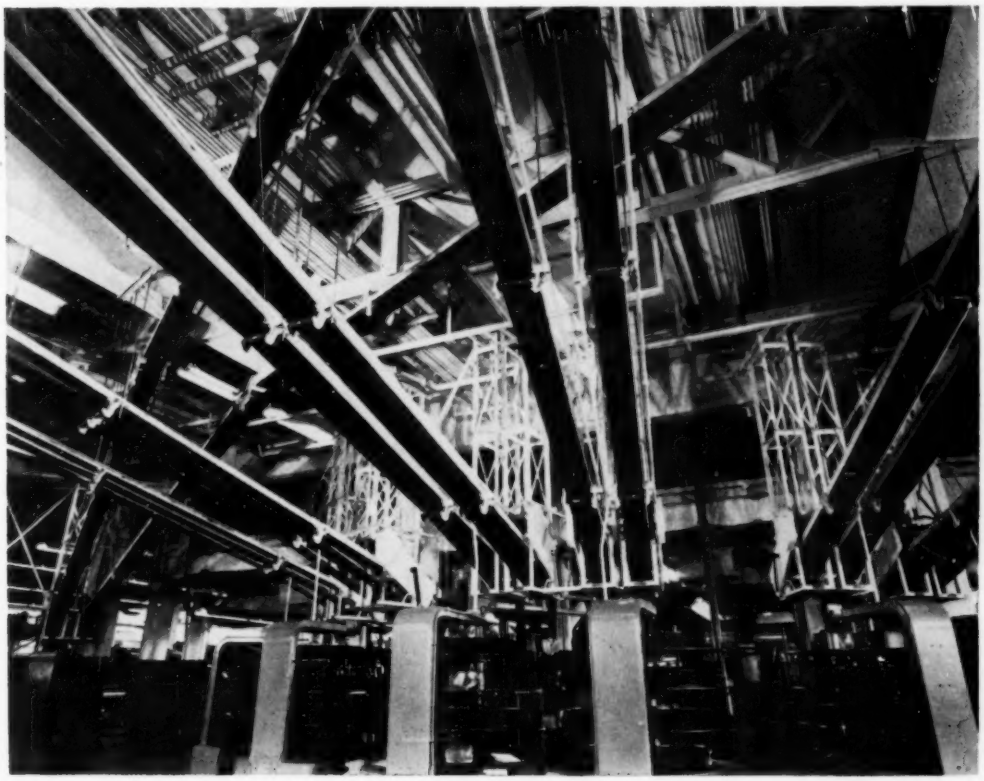
In this new process, high-tensile-

The 2,200 manila file folders in this pile would be needed to contain the records of the 2,200 cost-reduction cases handled by Western Electric manufacturing engineers since 1946. Each case represents a method of lowering cost and increasing efficiency of Western's tools, methods, and manufacturing processes

strength steel wire—tougher than the inner core of the old-type drop wire—enters two huge machines engineered to operate around the clock, each handling 25 wires simultaneously running through the process in one continuous operation. As the wire passes without pause from supply spool to final take-up reel at Western's Point Breeze Works, the machines clean the steel wire and apply by electric current, without interruption, successive coatings of copper, lead, and brass. Controls function automatically to produce wires of uniform conductivity with a minimum use of these metals.

But that's only one chapter in this story of achievement. Old-style drop wire, known as "TP," was in-

Above: Steel wires, 25 at a time, get successive coatings of copper, lead, and brass to prepare them for use as conductors in neoprene drop wire. The wires enter the cleaning and plating tanks at the far end, reverse direction in the foreground, and are finished when they reach the far end again. Right: An operator at Western's Point Breeze Works examines the wires as they move between floors



Conveyors, used to move synthetic rubber from one operation to another, make an unusual pattern in Western's Point Breeze Works

sulated with synthetic rubber, covered with a heavy cotton braid saturated with asphalt compound, and topped off with layers of pitch, mica flakes, and anti-stick solution. Then a far better type, known as "C" was introduced, using synthetic rubber as insulation and neoprene for the jacket.

To produce the huge quantities of drop-wire required, Western Electric engineers designed and set up one of industry's most efficient shops for processing synthetic rubber. Raw materials move by conveyor to big mixers, where they are mixed and timed automatically. The insulating and jacketing compounds move from one step in the process to another by overhead conveyors, and finally are wound in big coils beside the extruding machines, where the coverings are placed on the copper-coated steel wires.

Tests have indicated that "C's" superior resistance to abrasion, sunlight, and general weather conditions adds up to a lifetime of several times that of the "TP" type. Maintenance and repair costs are reduced drastically, telephone users get more dependable service, and the Bell Companies' drop wire costs go down.

"Shooting" wire connections onto terminals eliminates pliers, soldering iron, solder, and many motions in making six hundred million electrical connections a year in Western Electric factories

Relays Get a New Look

ANOTHER OLD STANDBY of telephony, the relay, has undergone changes in the interests of lower production and maintenance costs and improved reliability. A relay is an electromagnetic switching device used in all central offices to connect the calling with the called telephone. Now a new design, named the "wire spring" relay, has made its appearance to challenge the standard type in use for many years.

The new relay is radically different in appearance and manufacturing methods. Gone are the narrow strips of spring metal assembled in layers around an electromagnet which cause the contact points to meet or separate and thus to close or open circuits. In their place are spring wires molded securely into a plastic block. Also eliminated is the arrangement of tiny parts, nuts, and bolts that held the old-type relay together. Instead, a single U-shaped clamp is the principal binding force.

Without altering the fundamental electrical and mechanical principles of operation, the team of Western Electric and Bell Laboratories has created a relay easier to assemble and adjust, a device with greater operating efficiency and longer life, easier to maintain, and requiring less power to operate. And it will be less costly to manufacture.

Such a complex technological device obviously doesn't move directly from the laboratory to the telephone plant. Preproduction models had to be turned out by Western for extensive testing. Alternative designs and methods of manufacture were jointly reviewed by Western and Bell Laboratories engineers. Finally, quantity production processes were developed by Western and the tools,

machines, and production lines were designed and built.

At Western's Hawthorne Works in Chicago, home of the new relays, some 67,000 feet of floor space is being readied for the tools and heavy equipment necessary for permanent production facilities for the new product. Within a few months, when permanent production lines are completed, wire will run continuously from supply reels to be straightened, molded in plastic, cut into relay-size lengths called "combs," then have contacts welded in place and be formed and soldered into finished relays—the entire operation practically untouched by human hands. And all this at the rate of one every four seconds—a triumph of manufacturing engineering ingenuity.

"Shooting" Wires On Terminals Saves Money

ANOTHER COST-SAVING DEVELOPMENT, so far-reaching that its effects are being felt throughout the electronics industry, is an amazing new method of making electrical connections without solder. This, too, is a joint achievement of Western and the Laboratories. Solderless connections, now in use in cable terminals and units of central office telephone equipment, are neater, surer, faster to make, and less expensive than the long-familiar type of connection made by hand with pliers, soldering iron, and solder.

Solderless connections are made possible by a pistol-like tool with a power-driven spindle inside the barrel through which the wire is inserted. When the tool is placed over a terminal and the trigger pressed, there's a whir—and a split second later the wire is coiled snugly around the terminal so tightly that the metals of the terminal and wire bite into each other under the pressure. Anticipated trouble-free life of this solderless connection is 40 years. There are no solder splashes, no wire ends to be clipped. And connections can be made to terminals that are so close together soldering would be almost impossible.

Solderless connections sprang from an earlier Western Electric search for a better and less costly way to do a job. Looking for a more efficient way to connect wires to the very closely grouped terminals of the new wire spring relay, the first step was a mechanical wrapping method used in conjunction with solder. Development and improvement of the tool built for that purpose led to the solderless technique.

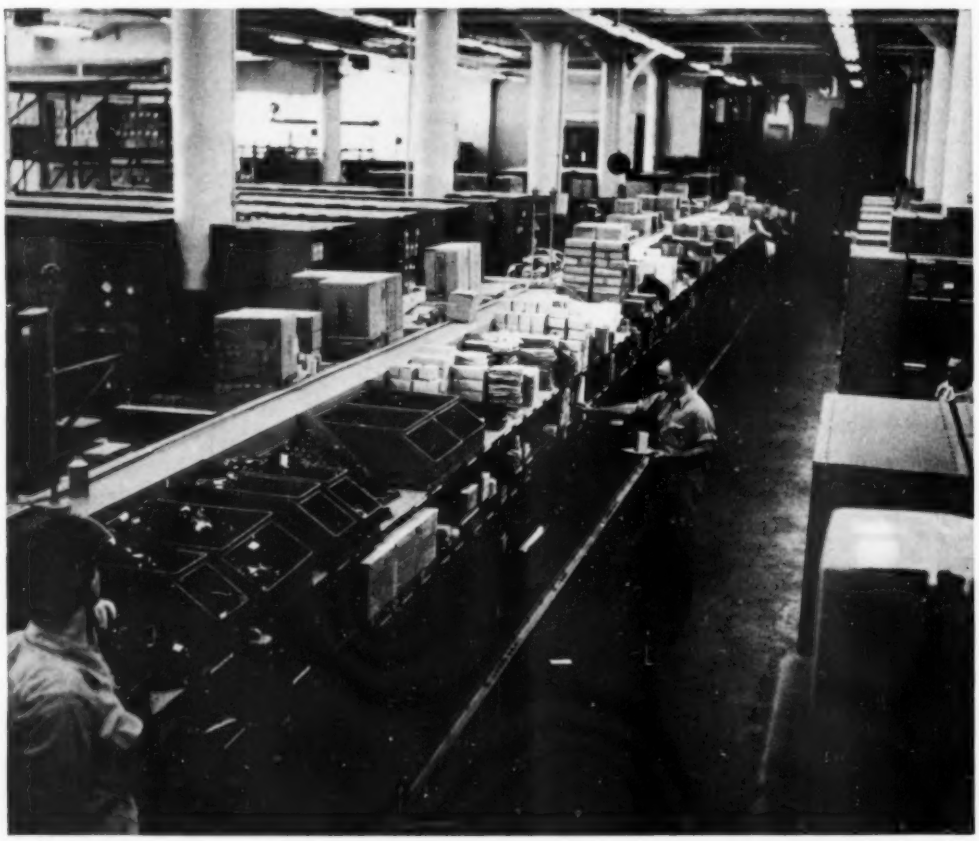
Significance of this radical development and its potentiality as a weapon in the Western Electric cost-reduction arsenal is indicated by the fact that an estimated one billion electrical connections are made annually in the Bell System. Not only do solderless connections save considerable time and money in the wiring of telephone equipment, they also reduce costly inspection operations and cut to a small fraction the time needed to train new operators.

The future of the new technique in Western Electric looms greater each week as work progresses on the conversion of relay and other terminals to the rectangular cross-section found most suitable for solderless connections, and as more and more production work is taken over by the wrapping tool.

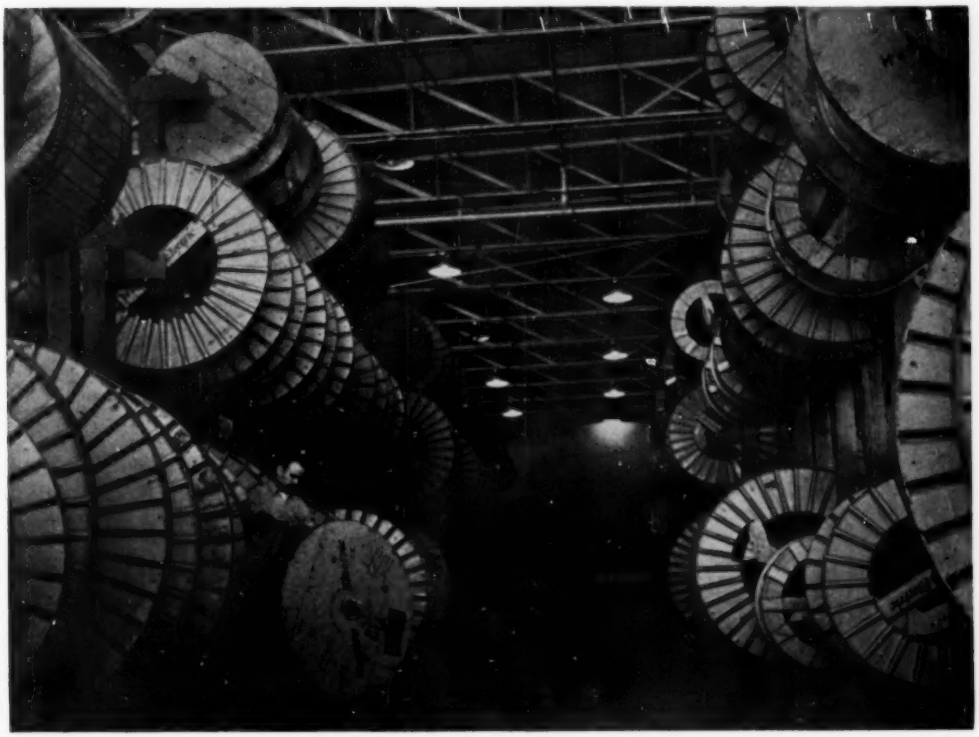
Western's Enormous Supply Task

MOVING from manufacturing to the purely supply phase of Western Electric's job—distribution, warehousing, and repairing—the record is equally outstanding. Western's distributing houses from coast to coast have seized every opportunity to streamline operations, cut costs, increase efficiency, and provide better service to their telephone-company customers.

An important step in the streamlining of distribution work has been the construction of ten new distributing warehouses during the last decade, replacing inadequate leased quarters. (Several more new houses are now in the planning stages). Into them Western has put all the experience of a lifetime spent in learning how to repair, store, select, pack, and ship telephone materials with speed, maximum efficiency, and lowest cost per item handled. And while new buildings have been growing, a revolution has taken place inside the structures, a quiet revolution in the handling of telephone supplies called "palletization."



Items frequently called for on telephone company orders are located along conveyor lines in Western Electric distributing houses. Boxes, each representing an order, ride the conveyors and are filled by stock selectors as they move along. This scene is in the new home of the Seattle Distributing House



Reels of telephone cables three tiers high show space conservation in Western's distributing houses. A new cable-measuring machine pulls cable from overhead reels and cuts it to exact length

Palletization—the machine age extended to material handling—means the handling and storage of supplies on wooden pallets, or small mobile platforms designed to be raised, lowered, and moved about on power trucks equipped with strong metal forks. Materials are practically never touched by human hand or shifted by human muscle until taken off the shelves to fill a telephone company order. Before this innovation, containers were stacked by hand and could not be piled higher than seven feet, the limit of a man's reach. Acres of space above the stacks were wasted. Now, however, metal racks designed to accommodate exactly a loaded pallet reach to the ceiling, sometimes as high as 20 feet. A truck picks up a heavy pallet, carries it to its proper aisle, lifts it with ease to the highest rack, and deposits it neatly into its own tailored compartment. If the pallet were stacked with eggs—which are *not* a stock item in Western's Houses—chances are not a shell would be cracked, so gently does the operation handle telephone apparatus.

A late refinement of this technique utilizes a slender new truck nicknamed the "straddle stacker." It can jockey a load into lifting position in an aisle only seven feet wide, compared with the 10 feet required for maneuvering

Short pieces of drop wire, which formerly could only be junked, are now spliced together at Western's distributing houses and restored to use

other fork trucks. This gives a dividend of three feet of storage space in each aisle.

Another time- and money-saver used wherever possible in distributing houses is the conveyor line. One such line wends its way through the warehouse to pick up the smaller items called for in telephone company orders. Men known as selectors are stationed along its path to add items to the boxes gliding past. Lately a new wrinkle has been added in the larger houses—an express line conveyor moving directly to the packing area at twice the speed of the "local" conveyor. Orders which need to move along just a short section of the slower line are pushed off onto the speedier one when filled. The minutes saved by this device, multiplied by thousands of orders, mean speedier and lower-cost service.

To the telephone companies, the scope of Western's distributing operations is as convenient as a housewife would find living next door to a modern metropolitan department store. Even with the telephone companies ordering, as they do, as many as 1,600,000 items per month from stock (and an item is one entry on an order, whether the quantity wanted is one or a thousand), about 97 percent of the items are shipped on the exact date specified on the orders, and three-quarters of the items are shipped the same day the orders are received. As a result, the telephone companies can keep their investment in field stocks at a bare minimum, confident they can get from Western what they need within a matter of hours.

Repair of telephone equipment and supplies is another aspect of the "make-every-penny-count" policy in the distributing houses. Each year, telephone sets by the millions and switchboard positions by the thousands are completely overhauled and

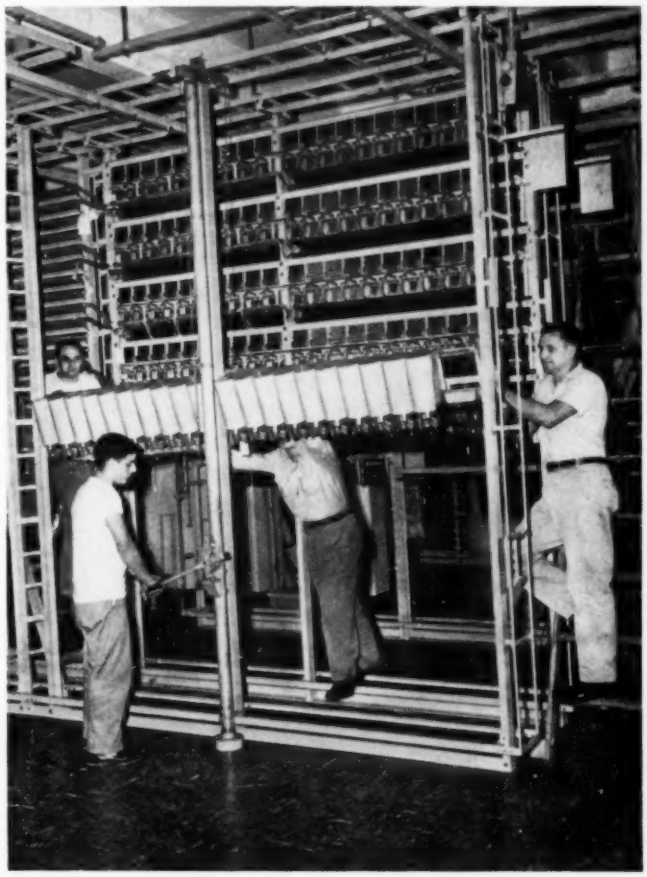
sent back into service. The job isn't confined to telephone equipment, by any means. Last year, among other things, Western Electric houses repaired and refurbished 17,000 pairs of pliers, 33,000 extension ladders, and 18,000 operator's chairs, and sent them back to telephone companies in good-as-new condition.

Last year, also, more than 38 million feet of drop wire was reclaimed and given a new lease on life. Telephone company installers saved wire taken out of service as well as the unusable short lengths left over at the ends of coils, then sent them to Western distributing houses to be inspected, spliced together, and vulcanized. With 38,000 coils of drop wire returned to service by this method, the Bell Companies chalked up a net saving of nearly $10 on each coil.

Responsibility for Installation

THE JOB of installing most of the central-office equipment and larger PBXs used by the Bell System—the erecting, assembling, wiring, and testing of the units shipped from Western's plants—falls to the Installation organization. Here, too, emphasis is on economy as well as quality and service. Western's installation organization has a formalized cost reduction program of its own similar to that in the factories. During 1951 and 1952, improvements in installation methods and tools resulting from this program brought savings amounting to hundreds of thousands of dollars.

Among the many special tools standardized for installation use were hydraulic trucks, power-driven reciprocating saws, portable test oscillators and a new winch-type hoist for



The new hoist being operated by the man on the floor lifts shelves of step-by-step switches, and can be set up by one man in a few minutes—as compared with an outmoded type which took two men nearly an hour to erect

raising units of step-by-step central office equipment in position.

Long shelves of step-by-step switches are far too heavy to be lifted by hand, and a mechanical device is required to do the work. The hoist used for many years was moved from job to job in four packing cases, plus two 12-foot lengths of metal. The device weighed 600 pounds and it took two men nearly an hour to set it up.

Not long ago, installation engineers came up with a new hoist that's so simple the proverbial child can operate it. It weighs about one-fifth as much, packs entirely in a single case, can be set up by one man without tools in a few minutes, and costs considerably less than the hoist it replaces.

In these days of high construction costs, space in new central office buildings is at a premium, and aisles have been narrowed to conserve construction dollars. But narrow aisles raise a knotty problem in maneuvering bulky cable reels and other equipment during installation. So, to make this economy practicable, Western's installation people worked out a method by which central office cables can be put in final position and all wires formed and cut to proper length before most of the equipment frames are installed. Numerous special fixtures, actually light-weight dummy frames, were designed to make it easy to tailor each wire to the proper length. Now, installers "running" the cables have plenty of space in which to work and the job is done faster and more economically. Equally important, since most of the equipment is not installed at the time the cabling and wiring is being done, the lint and dust resulting from these operations cannot get into the equipment to cause trouble later on.

Purchasing nearly every type of product needed by the Bell companies from outside sources of supply is another operation where gains have been made to help fight inflation.

Western Electric's purchasing job is a big one. In 1952, Western's purchases ran the alphabetic gamut from "abrasives" to "zinc," and included some 1,300 other products in between. Over 100,000 different items were bought in varying quantities from 27,500 suppliers across the nation, at a cost of $600,000,000.

Reducing Directory Costs

WESTERN'S purchasing people have not been content with the normal economies of their operation, such as quantity ordering and the elimination of duplicate purchasing staffs. They have been wide awake to new ways of extending the efficiency of their operations.

A striking example lies in Western's program for cutting the cost of printing telephone directories. About five years ago, a new type of super-high-speed press well fitted for directory work became available. These presses offered the lowest-cost method of printing directories for large cities, but their high original cost put them out of reach of a number of printers familiar with exacting directory work.

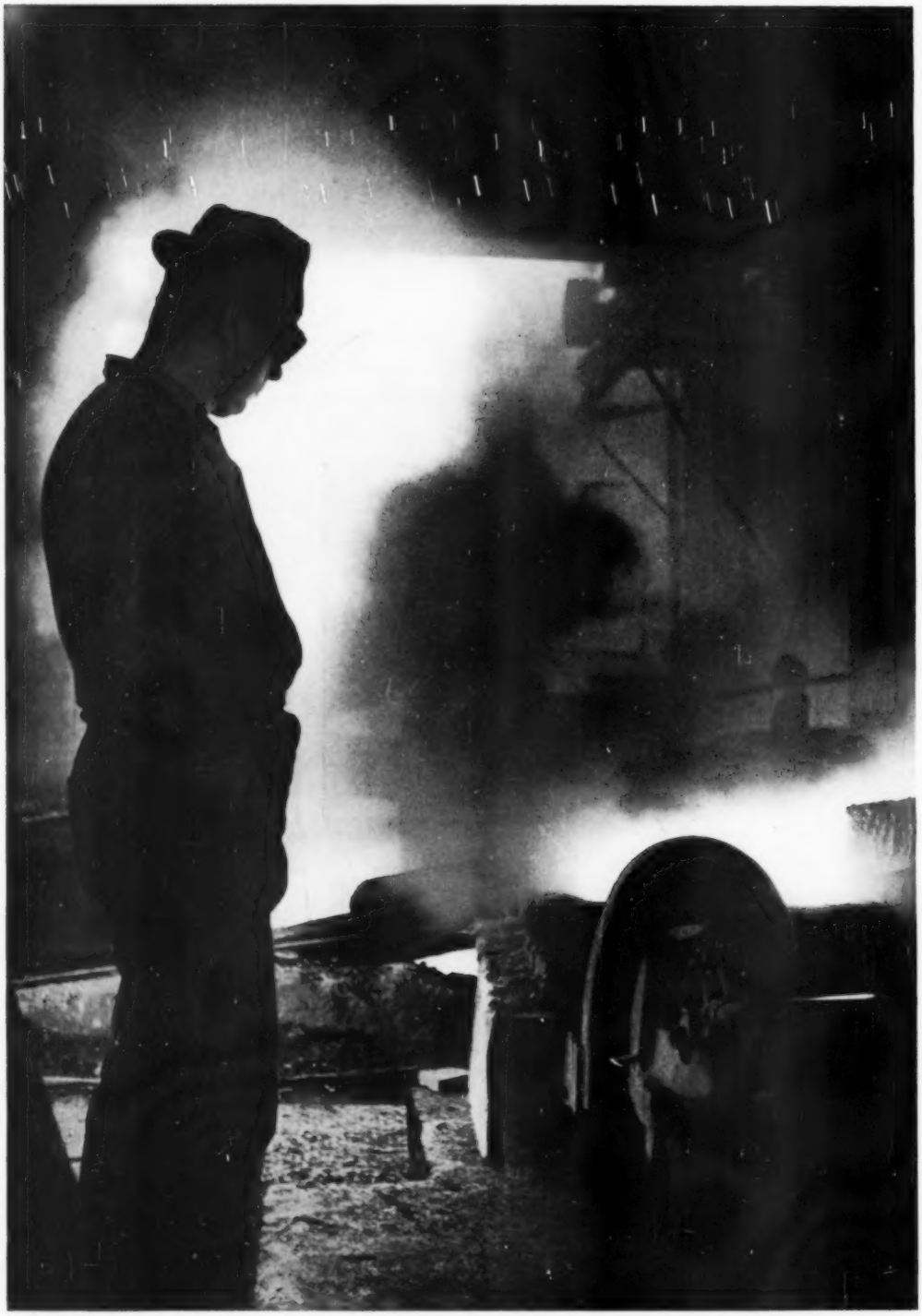
Western Electric purchasing people made it possible for these printers to buy the new equipment by writing long-term contracts. This enabled the printers to spread their investments over periods as long as ten years.

With the new presses installed and operating in ten different printing plants, directory costs took a nose dive. Printing speeds were nearly tripled and the time required to turn out a directory job was reduced appreciably. Savings will run into several millions of dollars over the life of the contracts.

The largest of the new presses can print as many as 1,500,000 directory pages per press per hour. That's a total of 416 printed pages—equal to a directory three-quarters of an inch thick—shooting from a single press *every second.* The paper, in ribbons over five feet wide, travels through the press at a speed of almost 1,000 feet a minute. When a roll of paper is used up, a new 1,800 pound roll is fastened to the end of the depleted roll by a device called a "flying paster" without even slowing down the speed of the press.

Teamwork of the Purchasing organization with the Bell Laboratories is illustrated by the case of a particular dry battery formerly purchased

Left: A Western Electric inspector checks a roll of directory paper 17½ feet wide. Below: This superspeed press prints the equivalent of a ¾-inch-thick telephone directory every second



At Western's subsidiary, Nassau Smelting & Refining Co., copper, lead, zinc, tin, and other non-ferrous metals are salvaged from outworn telephone equipment, and most of it is returned to Western Electric for re-use

by Western as a commercial brand product. About 400 test sets, each using 15 of these batteries, were in service, and their batteries required replacement about six times a year. When the number of test sets in use began to mushroom, Western's purchasing people and the Laboratories went into a huddle, and a special battery for the test sets was specified by the Laboratories engineers. These proved not only better for the particular use but could be obtained at a saving of 47 cents for each battery purchased.

Economy extends even to the "scrap heap," for Western Electric plays the role of salvager for the System on a sizable scale. Nothing that has commercial value is discarded. Such items as old burlap bags, empty bottles and cans and miscellaneous scrap iron and steel are sold locally at the best possible figure. One Western Electric Works location melts much of its own brass and copper scrap. But the bulk of the System's scrap—mainly unrepairable telephone equipment, wire, and cable —is sent to Western Electric's own smelter, the Nassau Smelting and Refining Company, on Staten Island, New York.

Practically all of the metal content of the 58,000 tons of scrap received last year at Nassau was salvaged. Most of the non-ferrous metal in this imposing quantity of junk was returned to Western as copper and lead alloy materials to be refashioned into new products for telephone service. At the present time, about one-seventh of the copper bars used by Western for making wire come from Nassau's furnaces, while nearly one-fifth of the System's lead requirements are met from the same source.

Economies Alone Are Not Enough

THE PRECEDING EXAMPLES, gleaned from the records of Western's manufacturing, distributing, installation, and purchasing organizations, represent just a few of Western Electric's efforts in the continuing struggle to furnish the American people the kind of telephone service they have learned to expect at a price that is fair to them and to the telephone company. But even the contributions of all members of the Bell System's three-way team —new and better designs from Bell Laboratories, more efficient operation by the Bell telephone companies, and lower production and distribution costs by Western Electric—can't cancel inflation's gains unaided.

As A. T. & T. President Cleo F. Craig told share owners last April:

"People get to thinking that if telephone rates are not adequate advancing technology will somehow remedy the situation. Under today's conditions this is totally unrealistic. Over the years, our technical advances have made it possible step by step to build more efficient facilities. But in the inflation through which we have been passing—the effects of which are very much with us—these improvements can but partially offset the tremendous increase in the cost of telephone service."

Forbes: Telephone Pioneer

By Arthur S. Pier. Dodd, Mead and Co., New York, 1953

A book review by Ralph E. Mooney

WILLIAM HATHAWAY FORBES headed one or another parent company of the Bell System from the beginning of the year 1879 until the Summer of 1887, when he wrote to a friend: "I am about retiring from the presidency of the American Bell Telephone Company, as I have given as many years to it as I am willing to."

During his presidency, he dealt with a number of monumental tasks. The first was fighting for and securing a settlement with the Western Union Telegraph Company, which at that time was attempting to compete for telephone business with the owners of the Bell patents. This was followed, year by year, by an increasing tide of litigation over attempts to break the patents in various ways. These culminated, in 1885, with an attempt by the Federal government to have the patents voided. Out of all this litigation, five suits finally reached the Supreme Court of the United States, and the Bell patents were upheld in every instance.

And all this while, there were problems incident to the development of telephone service. Growth figures for those early years read surprisingly small today, but that did not make the work any easier for the relatively few people involved. Nearly every problem that we have with us now was present then—at least in embryo. Where we can point to one that's wholly ours—such as the need to extend customer toll dialing, for instance—Forbes and his associates had one that has almost been forgotten, such as the need to develop workable underground cable.

Because of all this, Arthur Stanwood Pier's new biography, "Forbes: Telephone Pioneer," is a first-class contribution to the literature of telephone history. The lengthy and complete quotations from Forbes's letters to Alexander Graham Bell, Gardiner Green Hubbard, and others give new illumination to a period and to characters that should not be forgotten. The origin or strengthening of many a Bell System policy is indicated.

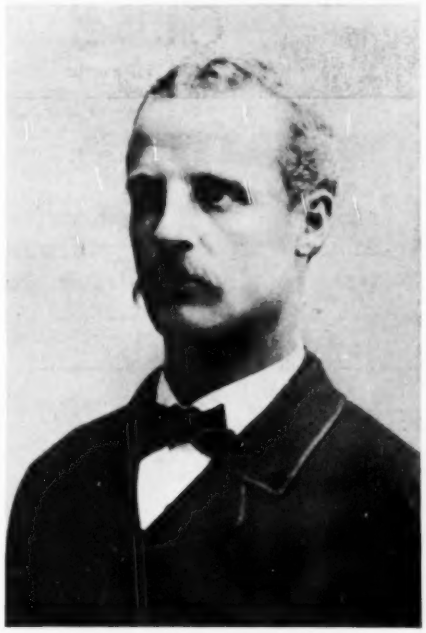
Forbes entered the War between the States as a second lieutenant in the First Massachusetts Cavalry, and rose to the rank of lieutenant colonel. He was captured by General John S. Mosby's forces, and out of this accident of war arose a cordial relationship between them which continued until Mosby's death. Forbes was exchanged in 1865, was in action at Lynchburg, and was among the officers present at Appomattox when Generals Ulysses S. Grant and Rob-

ert E. Lee discussed the terms of surrender of the Army of Virginia. These and other incidents have an important place in the first part of the book.

After his return from the army, Forbes married Edith Emerson, daughter of Ralph Waldo Emerson, famous New England author and philosopher. Some of Forbes's letters yield interesting material on Emerson family affairs.

Throughout much of the biography are paragraphs revealing Forbes's skill in and deep enjoyment of yachting. Among his other interests, aside from business, were travel, shooting, horses and horsemanship, and the administration of his residential estates.

William Hathaway Forbes was born in 1840 and died in 1897. His second son, W. Cameron Forbes, became a director of the American Telephone and Telegraph Company in 1919, and, save for the two years from 1930 to 1932 when he served as American Ambassador to Japan, he has continued in that office to the present time.



William Hathaway Forbes
1840–1897

Who's Who & What's What

(*Continued from page 127*)

tric. He went to work as assistant editor of the Allentown plant's employee newspaper. After nearly two years on that job, he transferred to the Western Electric public relations group at 195 Broadway, New York.

A BOOK REVIEW dealing, telephone-wise, with the period from 1879 to 1887 comes appropriately from the pen of RALPH E. MOONEY, who since 1945 has been historical librarian of the A. T. & T. Company. His telephone career began in 1924, after some years of newspaper and trade journal experience, when he joined the Public Relations Department of the Southwestern Bell Telephone Company in St. Louis. Before transferring to New York in 1944 he had been editor of the *Southwestern Telephone News*, and in recent years he has been a frequent contributor to this MAGAZINE. His most recently published article was "The First Seventy-Five Years," in the issue for Spring 1951.

Bell's Brantford Home Becomes a Canadian Historic Site

HERE, AT THE HOME OF HIS FATHER, ON 26TH JULY, 1874, ALEXANDER GRAHAM BELL DISCLOSED FOR THE FIRST TIME HIS CONCEPTION OF THE PRINCIPLE OF THE TELEPHONE. FROM BRANTFORD CALLS WERE MADE TO MOUNT PLEASANT ON 3RD, TO HIS HOMESTEAD ON 4TH, AND TO PARIS, ONTARIO, ON 10TH AUGUST, 1876. THE LATTER IS NOW RECOGNIZED AS THE WORLD'S FIRST LONG DISTANCE CALL.

THIS INSCRIPTION on a bronze tablet set into a stone monument was unveiled by two of Alexander Graham Bell's granddaughters on September 12, 1953, when the Bell homestead at Brantford, Ontario, was designated as a National Historic Site by the Government of Canada. The granddaughters, Mrs. Lilian Grosvenor Coville, of Washington, D. C., and Mrs. Nancy Fairchild Bates, of Ann Arbor, Michigan, represented their mothers, Mrs. Gilbert Grosvenor and Mrs. David Fairchild, at the ceremony.

In her dedication talk, Mrs. Coville said: "Alexander Graham Bell was born a Scotsman, became an American citizen and remained one to the end of his days, but he always loved Canada. He kept a home in Canada for more than 30 years and it was by his own request that he now rests on an open hillside atop Beinn Breagh, his 'Beautiful Mountain,' at Baddeck, Nova Scotia."

The principal speaker at the dedication, T. Roy Woodhouse, president of the Ontario Historical Society, described various early experiments which Dr. Bell carried on at Brantford.

Interesting sidelights of Dr. Bell's life were disclosed by Mrs. Coville, who arrived for the ceremony in a plane piloted by her son, Gilbert Grosvenor Coville.

"It seems appropriate," she said, "that my son and I should fly from Nova Scotia, the home of grandfather's mature years, to Brantford, the home of his young manhood. In his youth, as you know, the possibility of flying in heavier-than-air craft was considered a fool's dream. In his mature years he staked his scientific reputation on his firm, continuing belief that man would soon fly. When we were small children, grandfather used to tell us that some day we would fly the ocean, dine in London and breakfast next morning in New York. He said that our sons would take to the air, yearning over airplanes as we did over sailboats. Although light plane flying is not yet as popular as he expected, several of his great-grandsons have owned their own planes."

Mrs. Coville also explained the importance of sound in her grandfather's life. "No man was ever more conscious of sound than Graham Bell," she said. "He worked best at night, late at night, when all the world was still. Noises of any kind disturbed his train of thought—even clocks. At one period," she recalled, "the clock repairman came often. Then it was discovered that Grandfather had been going around in the wee small hours stopping clocks because their noise bothered him."

The committee in charge of arrangements for the celebration in Brantford was made up of members of the Charles Fleetwood Sise Chapter, Telephone Pioneers, members of the Parks Board, and representatives of various local organizations. Representatives of the Bell System, in addition to Canadian Government officials and local residents, took part in the dedication ceremonies.

Twenty-five Years Ago in the BELL TELEPHONE QUARTERLY:
From Volume VII Number 4, October, 1928

Service to the Nation in Peace and War

An allegorical group of sculpture in bronze and marble has been put up in the main lobby of the Telephone and Telegraph Building, 195 Broadway, New York City, in a place which was designed for its reception when the building was erected. This group, which is the work of Chester Beach, the noted sculptor, expresses the idea of the words inscribed on the base: "Service to the Nation in Peace and War."

The heroic central figure in bronze represents Service, calling and sending forth the power of the nation. Conceived as a great dynamic force, Service stands before the flag, conscious of the vital epic romance, past and future, that is carried through the air. Behind the head of this figure are lines of uncoiling wire, and at the base, partly covered by the flag, a wreathed helmet of the World War bespeaks the thought

of those who gave all in the service of their country. Above the bronze, in marble blending with the walls, are figures representing the messages of peace and war as they speed along the wires. They encircle a sculptured outline of the United States, on which East, West, North, and South are interlinked with lines of communication.

The Next Seventy-Five Years

Back in 1878—that's 75 years ago—the first commercial telephone switchboard was placed in service in New Haven, Connecticut. It was a most important development in the growth of telephone service.

You see, before the switchboard was invented, a telephone instrument was connected only to the other instruments on the same line. Of course, you couldn't reach the telephones not on your line. It really isn't any wonder that some folks regarded the telephone as a toy, limited in usefulness.

But the switchboard changed all that. It made it possible for any telephone to be connected to any other telephone in town. And, as soon as people saw how convenient and useful telephones could be, the business really began to grow! Within a few months telephone companies, with switchboards, started up in towns and cities across the land.

This year is the seventy-fifth Anniversary, the Diamond Jubilee, of telephone service in many communities. The year 1878, when the telephone itself was two years old, saw the first telephone exchanges in Connecticut, California, New York, Delaware, Massachusetts, Missouri, Oregon, Illinois, Michigan, New Hampshire, Iowa, Ohio, Wisconsin, Pennsylvania, the District of Columbia and the Dominion of Canada.

Telephone companies in many of these places are holding formal celebrations in 1953. Many more will celebrate their Seventy-fifth Anniversaries in 1954.

And, after seventy-five years of service to the community, Bell telephone companies are still seeking ways to make telephone service better and to keep its cost within the reach of everyone. They will do their best to make the next seventy-five years even greater than the last in the advancement of communications.

Telephone story heard on the *Telephone Hour* radio program

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By instilling in his subordinates and employees his own spirit of reasonableness, fairmindedness, and courtesy, he [William H. Forbes] won public opinion to the support of the Telephone Company and by so doing overcame all its rivals. And then with skill and imagination he laid the groundwork for the vast structure that was not to be reared while he lived but that he saw in outline. . . He and the men who were associated with him in the Telephone Company had a flaming faith in the value of the work that they were doing. They saw, and none of them with more perceptive eyes than Forbes, what an instrument for spreading civilization, reducing hardship, promoting comfort and happiness, liberating men and women from the thralldom of plodding labor, the telephone might become. If its facilities had been as fully developed while Forbes was president of the company as they are now, he could have transacted in hours the business which cost him weeks of wearisome longhand writing. The contribution to human efficiency made by him and the men with whom he worked is incalculable.

From "Forbes: Telephone Pioneer," a biography of William Hathaway Forbes which is reviewed in this issue.